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DRAWING DIRECTORY

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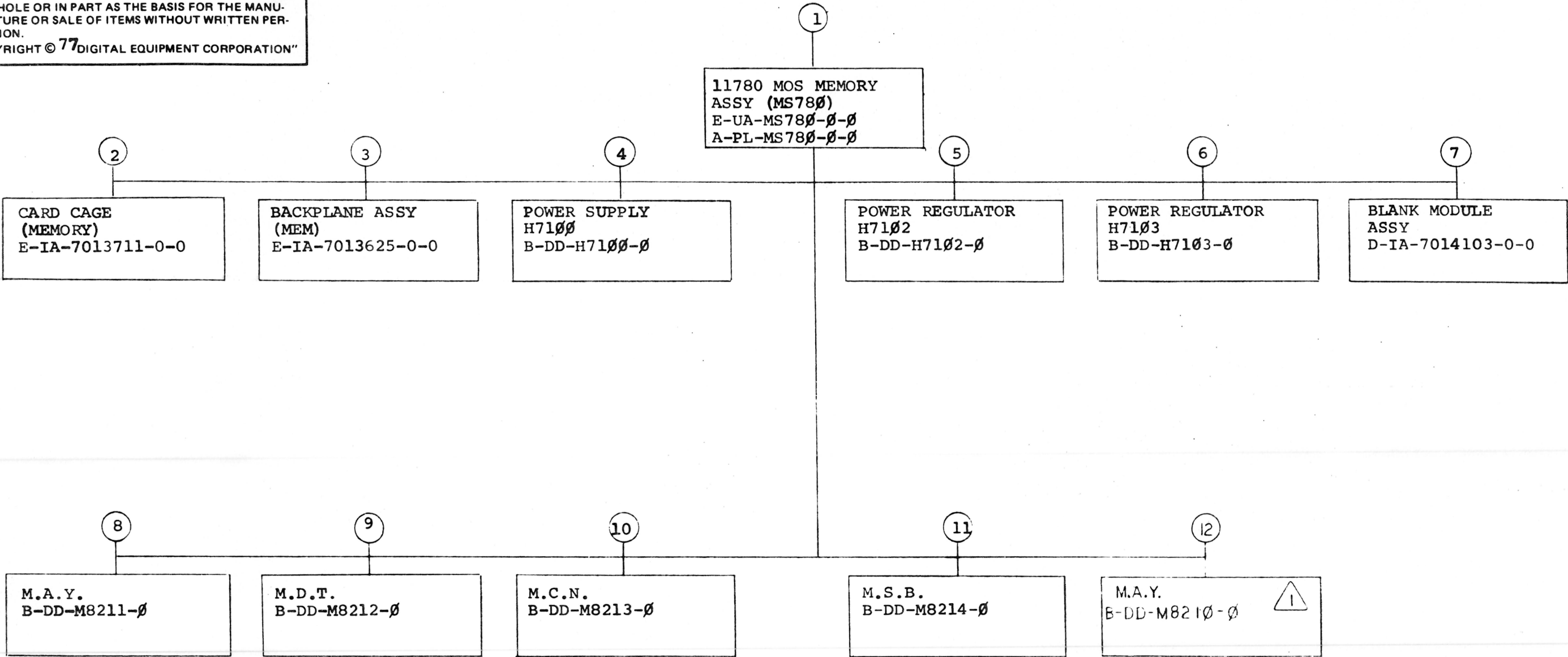
UNIT VARIATIONS

VAR	TITLE
MS780-AA	128K BYTE MEM AND CONTROL 2 M8211, M8212, M8213, M8214 AND SPACE FOR 7 MORE MS780-B H7100-A POS, H7102 H7103 REG. 115V 50/60 HZ
MS780-AB	MS780-AA EXCEPT H7100-B P.S. 230V AC 50/60 HZ
MS780-BA	128K BYTE EXPANSION 2 M8211
MS780-CA	256KB MEM AND CONTROL M8210 M8212, M8213, M8214 AND SPACE FOR 15 MORE MS780-D H7100-A POS, H7102, H7103 REG. 115V 50/60 HZ
MS780-CB	MS780-CA EXCEPT H7100-B P.S. 230V AC 50/60 HZ
MS780-DA	256K BYTE EXPANSION M8210
MS780-DB	512K BYTE EXPANSION M8210
MS780-DC	1024K BYTE EXPANSION M8210
MS780-DD	2048K BYTE EXPANSION M8210
MS780-CC	SAME AS MS780-CA EXCEPT WITH 512KB MEM, 2-M8210 + SPACE FOR 14 MORE MS780-D
MS780-CD	SAME AS MS780-CB EXCEPT WITH 512KB MEM, 2-M8210 + SPACE FOR 14 MORE MS780-D

MS780-BA & MS780-DA CANNOT BE INTERMIXED IN THE SAME BACKPLANE.

REVISIONS	REV.	A	B	C	D
	CHANGE NO.	MS780-1	MS780-2	MS780-TW3	MS780-TW5
	CHK	P.R.	P.G.	J.L.	E.C.
USED ON OPTION/MODEL					
11780					
DRN.					
P. BOUDREAU					
DATE					
SEP 77					
CHK'D.					
DATE					
NOV 77					
PROD. ENG.					
15 NOV 77					
PROD.					
DATE					
11/1/77					
SHEET 1 OF 3					
TITLE					
11780 MOS MEMORY ASSY (MS780)					
digital					
SIZE		CODE		NUMBER	
B		DD		MS780-0	
DIST.				REV	
				D	

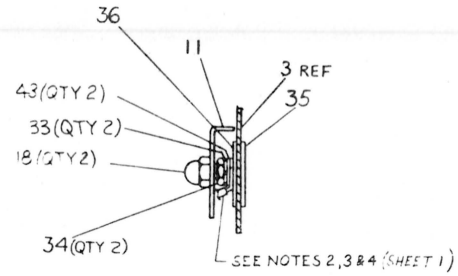
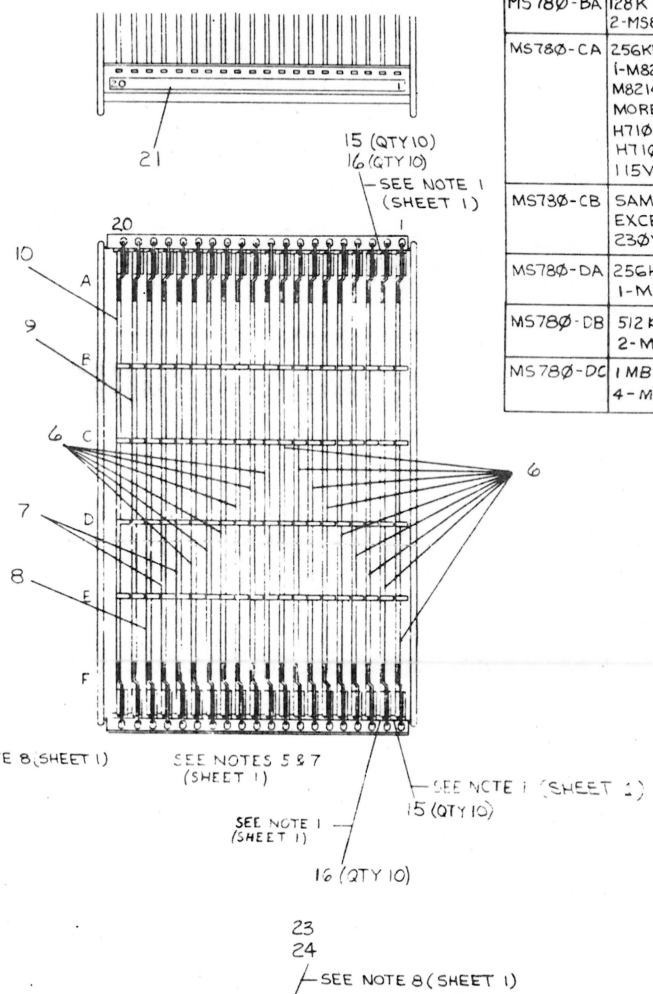
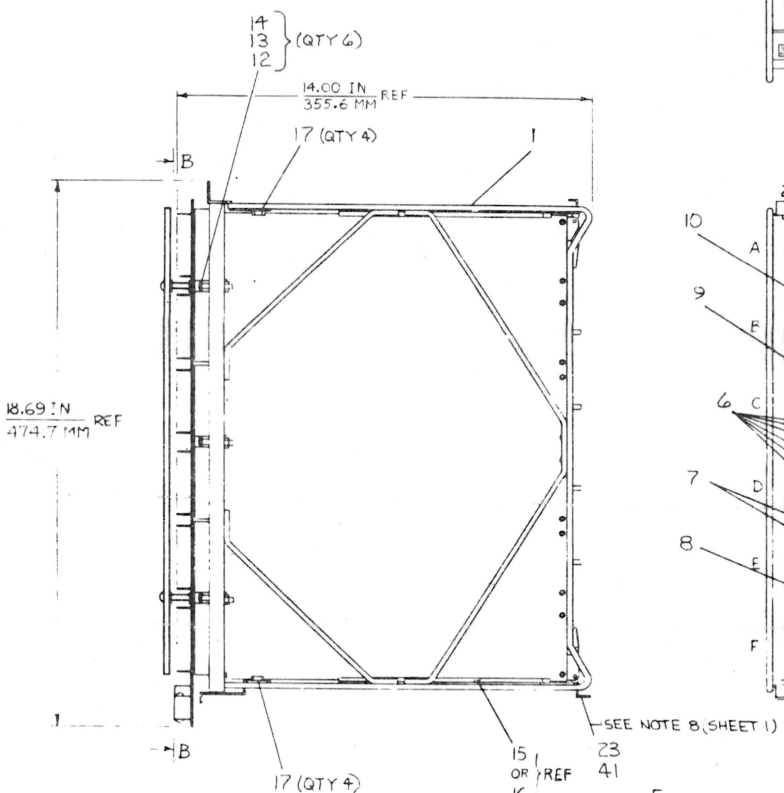
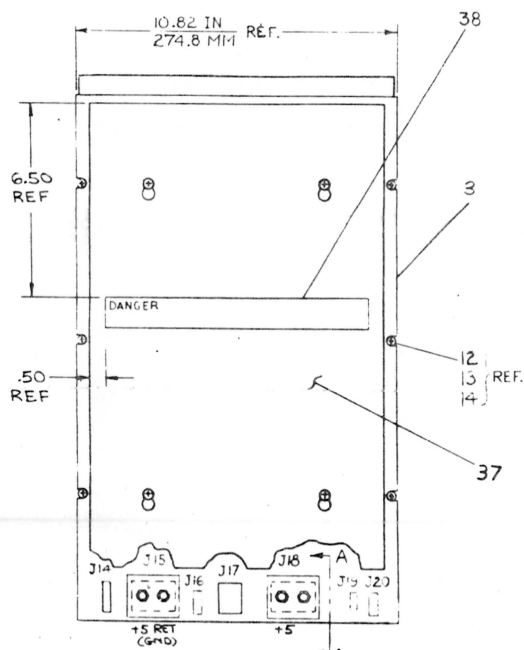
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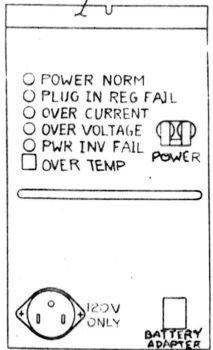
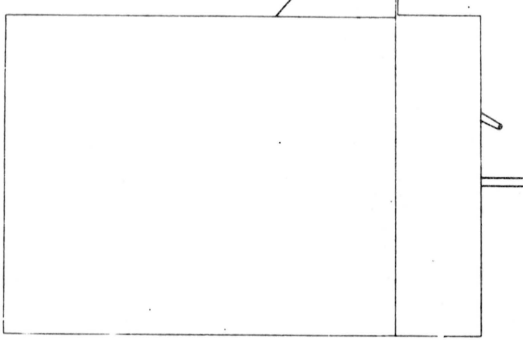
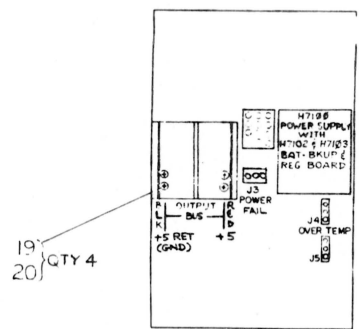
⚠ M8211 (64K BYTE) CANNOT BE INTERMIXED WITH THE M8210 (256K BYTE) IN THE SAME BACKPLANE.

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J
H
F
D
C
B
A



SECTION A-A
SCALE 1/1
TYP 2 PLACES



LEGEND	
NUMBER	VARIATION
MS780-DD	2 MB EXPANSION 8-MB210
MS780-CC	512 KB MEMORY+CONTR 2-MB210, MB212, MB213, MB214+SPACE FOR 14 MORE MS780-DA H7100-A P.S., H7102, H7103 REG. 120V AC 50/60 HZ
MS780-CD	SAME AS MS780-CA EXCEPT H7100-B P.S. 240V AC 50/60 HZ
MS780-AA	128K BYTE MEM & CONTR 2-MB211, MB212, MB213, MB214+SPACE FOR 7 MORE MS780-B H7100-A P.S., H7102, H7103 REG. 115V.A.C. 50/60HZ
MS780-AB	MS780-AA EXCEPT H7100-B P.S. 230V.A.C. 50/60HZ
MS780-BA	128K BYTE EXPANSION 2-MSB211
MS780-CA	256KB MEMORY & CONTR 1-MB210, MB212, MB213, MB214+SPACE FOR 15 MORE MS780-DA H7100-A P.S., H7102, H7103 REG. 115V.A.C. 50/60 HZ
MS780-CB	SAME AS MS780-CA EXCEPT H7100-B P.S. 230V.A.C. 50/60 HZ
MS780-DA	256KB EXPANSION 1-MB210
MS780-DB	512 KB EXPANSION 2-MB210
MS780-DC	1 MB EXPANSION 4-MB210

NOTES: (PERTAIN TO SHEET 1 ONLY)

- CARD GUIDE TO BE INSTALLED AS FOLLOWS:
ITEM 15 IN ALL ODD ROWS 1,3,5 ETC.
ITEM 16 IN ALL EVEN ROWS 2,4,6 ETC.
- FOR SYSTEM INTERCONNECTION SEE
D-IC-11780-0-3
- FOR SYSTEM CABLE INTERCONNECTION SEE
D-IC-11780-0-2
- FOR SYSTEM A/C INTERCONNECTION SEE
D-IC-11780-0-1
- FOR MS780 MODULE UTILIZATION SEE
D-MU-MS780-0-0
- FOR ORIENTATION OF POWER SUPPLY
REGULATOR SEE D-REG-11780-0-0
- FOR SYSTEM EXPANSION REFER TO
D-MU-MS780-0-2.
- OPTION MOUNTING HARDWARE.
FOR INSTALLATION
REF E-UA-11780-0-0

REV	DATE	BY	CHKD	APPD	DESCRIPTION
1	3 JAN 78	P. HADD			REVISED
2	6 MAR 78	P. HADD			REVISED
3	10 APR 78	P. HADD			REVISED
4	10 APR 78	P. HADD			REVISED
5	10 APR 78	P. HADD			REVISED
6	10 APR 78	P. HADD			REVISED
7	10 APR 78	P. HADD			REVISED
8	10 APR 78	P. HADD			REVISED
9	10 APR 78	P. HADD			REVISED
10	10 APR 78	P. HADD			REVISED
11	10 APR 78	P. HADD			REVISED
12	10 APR 78	P. HADD			REVISED
13	10 APR 78	P. HADD			REVISED
14	10 APR 78	P. HADD			REVISED
15	10 APR 78	P. HADD			REVISED
16	10 APR 78	P. HADD			REVISED
17	10 APR 78	P. HADD			REVISED
18	10 APR 78	P. HADD			REVISED
19	10 APR 78	P. HADD			REVISED
20	10 APR 78	P. HADD			REVISED
21	10 APR 78	P. HADD			REVISED
22	10 APR 78	P. HADD			REVISED
23	10 APR 78	P. HADD			REVISED
24	10 APR 78	P. HADD			REVISED
25	10 APR 78	P. HADD			REVISED
26	10 APR 78	P. HADD			REVISED
27	10 APR 78	P. HADD			REVISED
28	10 APR 78	P. HADD			REVISED
29	10 APR 78	P. HADD			REVISED
30	10 APR 78	P. HADD			REVISED
31	10 APR 78	P. HADD			REVISED
32	10 APR 78	P. HADD			REVISED
33	10 APR 78	P. HADD			REVISED
34	10 APR 78	P. HADD			REVISED
35	10 APR 78	P. HADD			REVISED
36	10 APR 78	P. HADD			REVISED
37	10 APR 78	P. HADD			REVISED
38	10 APR 78	P. HADD			REVISED
39	10 APR 78	P. HADD			REVISED

FOR PARTS LIST SEE A-PL-MS780-0-0

QUANTITY & VARIATION	DESCRIPTION	DWG. PART NO.	ITEM NO.
1	11780 MOS MEMORY ASSY (MS780)	11780	1
1	11780 MOS MEMORY ASSY (MS780)	11780	2
1	11780 MOS MEMORY ASSY (MS780)	11780	3
1	11780 MOS MEMORY ASSY (MS780)	11780	4
1	11780 MOS MEMORY ASSY (MS780)	11780	5
1	11780 MOS MEMORY ASSY (MS780)	11780	6
1	11780 MOS MEMORY ASSY (MS780)	11780	7
1	11780 MOS MEMORY ASSY (MS780)	11780	8
1	11780 MOS MEMORY ASSY (MS780)	11780	9
1	11780 MOS MEMORY ASSY (MS780)	11780	10
1	11780 MOS MEMORY ASSY (MS780)	11780	11
1	11780 MOS MEMORY ASSY (MS780)	11780	12
1	11780 MOS MEMORY ASSY (MS780)	11780	13
1	11780 MOS MEMORY ASSY (MS780)	11780	14
1	11780 MOS MEMORY ASSY (MS780)	11780	15
1	11780 MOS MEMORY ASSY (MS780)	11780	16
1	11780 MOS MEMORY ASSY (MS780)	11780	17
1	11780 MOS MEMORY ASSY (MS780)	11780	18
1	11780 MOS MEMORY ASSY (MS780)	11780	19
1	11780 MOS MEMORY ASSY (MS780)	11780	20
1	11780 MOS MEMORY ASSY (MS780)	11780	21
1	11780 MOS MEMORY ASSY (MS780)	11780	22
1	11780 MOS MEMORY ASSY (MS780)	11780	23
1	11780 MOS MEMORY ASSY (MS780)	11780	24
1	11780 MOS MEMORY ASSY (MS780)	11780	25
1	11780 MOS MEMORY ASSY (MS780)	11780	26
1	11780 MOS MEMORY ASSY (MS780)	11780	27
1	11780 MOS MEMORY ASSY (MS780)	11780	28
1	11780 MOS MEMORY ASSY (MS780)	11780	29
1	11780 MOS MEMORY ASSY (MS780)	11780	30
1	11780 MOS MEMORY ASSY (MS780)	11780	31
1	11780 MOS MEMORY ASSY (MS780)	11780	32
1	11780 MOS MEMORY ASSY (MS780)	11780	33
1	11780 MOS MEMORY ASSY (MS780)	11780	34
1	11780 MOS MEMORY ASSY (MS780)	11780	35
1	11780 MOS MEMORY ASSY (MS780)	11780	36
1	11780 MOS MEMORY ASSY (MS780)	11780	37
1	11780 MOS MEMORY ASSY (MS780)	11780	38
1	11780 MOS MEMORY ASSY (MS780)	11780	39

NOTES: (PERTAINS TO SHEET # 2 ONLY.)

1. I - JUMPER PLACED ACROSS PAIR OF PIN:
DESIGNATED.
-- NO JUMPER.
2. BACKPLANE SLOT DESIGNATION:
EXAMPLE: CA2 C=CONN. BLOCK, A=FINGER
2= SIDE
3. N.C. MEANS NO CONNECTION TO THAT SLOT.
4. J16 IS CONNECTED ONLY IF TRM BOARD
(M9040) IS IN SLOT #1.
5. MEMORY TIMING SEQUENCE SHOWS POWER
TURN ON - TURN OFF ORDER ONLY. IT DOES
NOT INDICATE RELATIVE TIME RELATIONSHIPS.
THIS TIMING IS FOR A NON BATTERY BACKED
UP SYSTEM.
6. MEMORY CONFIGURATION GUIDELINES:
 - A. ALL BACKPLANES COME FROM MANUFACTURING
CONFIGURED AS MEMORY CONTROLLER #1.
 - B. ROM BOOTSTAP WILL ALWAYS BE ON
MEMORY CONTROLLER #1.
 - C. MEMORY CONTROLLER WITH ROM BOOTSTRAP
IS SYSTEM CRITICAL AND WILL ACTIVATE
FAIL ON POWER DOWN.
 - D. MEMORY CONTROLLERS WITHOUT ROM, ARE NOT
SYSTEM CRITICAL AND WILL USE ALERT
MECHANISM FOR CHANGE IN POWER STATUS.
 - E. MEMORIES WILL TYPICALLY BE HIGHEST
PRIORITY ON THE BUS.
 - F. STARTING ADDRESS STRAPPING IS ONLY
USED BY THE MEMORY ON COLD POWER UP
SO EACH MEMORY ASSUMES SOME UNIQUE
PREDEFINED ADDRESS. ACTUAL OPERATING
STARTING ADDRESS IS LOADED BY THE
SOFTWARE TO EACH MEMORY CONTROLLER.
4. INTERLEAVED MEMORY CONTROLLERS MUST
BE CONTIGUOUS BUSTR LEVELS. THEY MUST
ALSO HAVE THE SAME STARTING ADDRESS
AND ARRAY SIZE. ON COLD POWER UP,
INTERLEAVE BIT IS CLEARED. INTERLEAVE
BIT IS SET BY THE SOFTWARE.
- J. ONLY TWO WAY INTERLEAVING IS ALLOWED.
WITH FOUR CONTROLLERS, CONTROLLERS 1+2
COULD BE INTERLEAVED AND CONTROLLERS
3+4 COULD BE INTERLEAVED.
7. WSPARE JUMPERS NOT USED AT THIS TIME.

TYPICAL MEMORY CONFIGURATIONS:

MEMORY CONTROLLER NO	BUS TR LEVEL	FAIL STRAPPING	IRD STRAPPING 24H	SA STRAPPIN
1	1	W	—	0
2	2	—	I	4 MEGABY
3	3	—	I	8 MEGABY
4	4	—	I	12 MEGABY

SEE NOTE 6 (SHEET 2)

STARTING ADDRESS STRAPPING

12H00H255	MEMORY CONTROLLER STARTING ADDRESS AFTER COLD POWER UP ONLY
— —	0 MEGA BYTE
— I	4 MEGA BYTE
I —	8 MEGA BYTE
I I	12 MEGA BYTE

TR LEVEL STRAPPING

WIRE TO	WIRE FROM	WIRE TO	WIRE FROM	BUS LEVEL
—	—	—	F20C1	1
—	—	I	F20D1	2
—	I	—	F20E1	3
—	I	I	F20F2	4
—	I	—	F20H2	5
—	I	I	F20J1	6
—	I	I	F20J2	7
—	I	I	F20M1	8
I	—	—	F20N1	9
I	—	I	F20P1	10
I	—	I	F20P2	11
I	—	I	F20S2	12
I	I	—	F20T2	13
I	I	I	F20U1	14
I	I	I	F20U2	15

SEE NOTE 1 (SHEET #2)

FAIL STRAPPING:

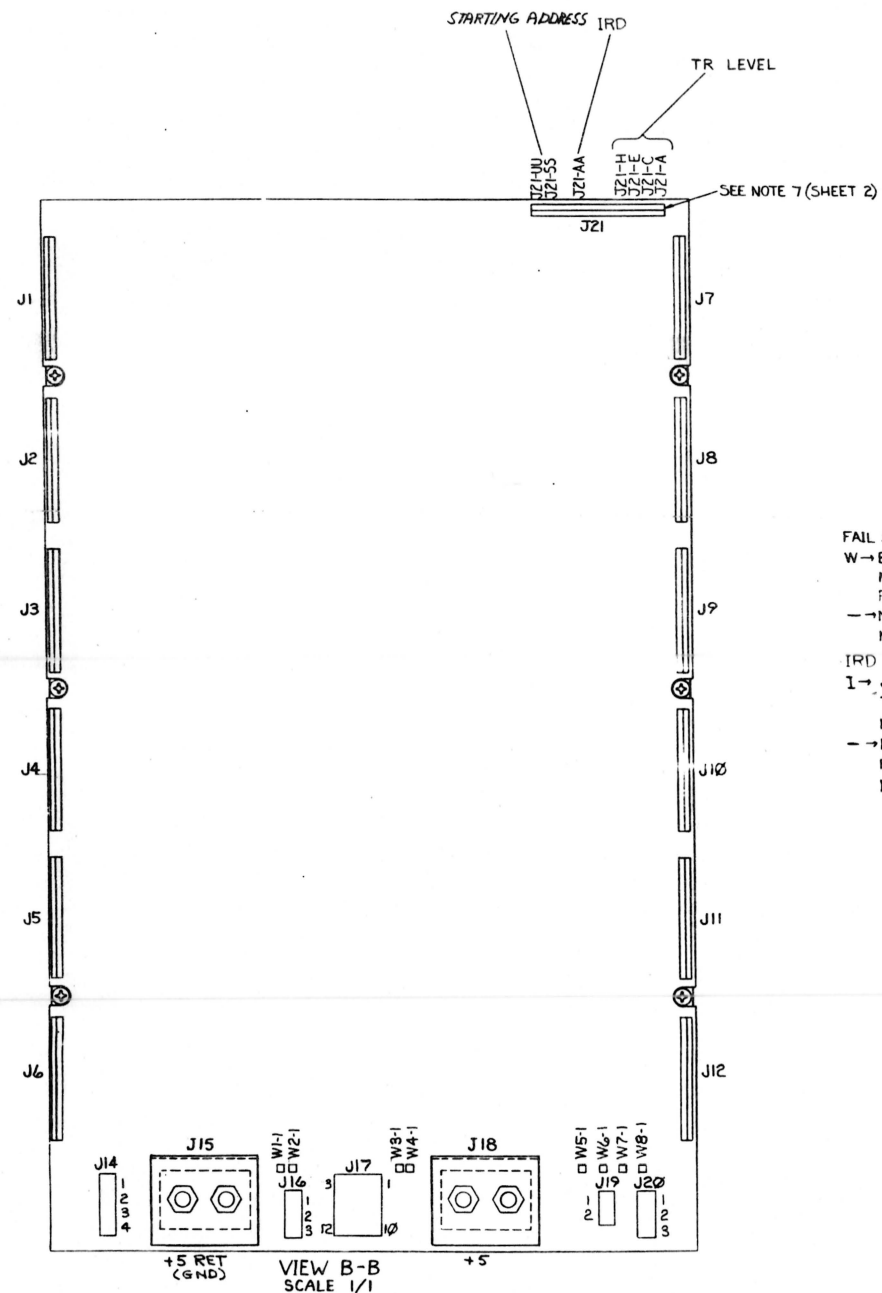
W → BACKPLANE WIRE FROM D24B2 TO C20V2 ALLOWS THE MEMORY TO ACTIVATE THE BUS SBI FAIL L SIGNAL FOR POWER FAILING CONDITION.

—→NO BACKPLANE WIRE BETWEEN D20B2 AND C20V2.
MEMORY WILL NOT ACTIVATE BUS SBI FAIL L.

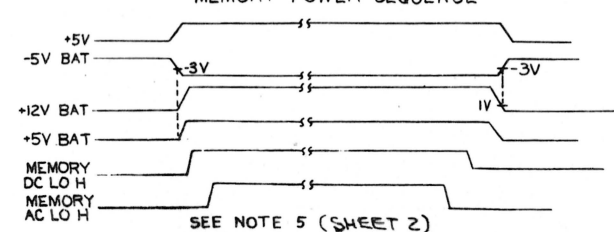
IRD STRAPPING: (INHIBIT ROM DECODE)

1 → JUMPER PLACED ACROSS PAIR OF PINS, READ COMMANDS TO ROM ADDRESSES RECEIVE NO RESPONSE AND ARE NOT INITIATED. MEM USES ALERT FOR POWER STATUS.

→ NO JUMPER. READ COMMANDS TO ROM ADDRESSES RECEIVE NORMAL CONFIRMATION AND CYCLE IS INITIATED. MEMORY DOES NOT USE ALERT FOR POWER STATUS.



MEMORY POWER SEQUENCE



SEE NOTE 5 (SHEET 2)

[illegible]

SEE NOTES 2, 3 & 4 (SHEET #2)

DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS PARTS LIST					QUANTITY VARIATION										
MADE BY W. FISHER		CHECKED D. HEALY		SECTION	MS780-AA	MS780-AB	MS780-BA	MS780-CA	MS780-CB	MS780-DA	MS780-DB	MS780-DC	MS780-DD	MS780-CC	MS780-CD
DATE 6 JUL 77		DATE 28 JUL 77		1											
ENG <i>P. Fisher</i>		PROD <i>P. Fisher</i>		ISSUED SECT.											
DATE 19 Sept 77		DATE 11/4/77		1											
ITEM NO.	DWG NO./PART NO.	DESCRIPTION													
1	E-UA-7013711-0-0	CARD CAGE (MEMORY)			1	1	-	-	-	-	-	-	-	1	1
2	3614746-00	LABEL, MODULE UTILIZATION MS780			1	1	-	-	-	-	-	-	-	1	1
3	E-IA-7013625-0-0	BACKPLANE ASSY (MEMORY)			1	1	-	-	-	-	-	-	-	1	1
4	E-AD-7014957-00	MEMORY OPTION POWER SUPPLY 115V AC			1	-	-	-	-	-	-	-	-	1	-
5	E-AD-7014957-01	MEMORY OPTION POWER SUPPLY 230V AC			-	1	-	-	-	-	-	-	-	-	1
6	D-IA-7014103-0-0	BLANK MODULE ASSY			15	15	-	16	16	-	-	-	-	15	15
7	E-UA-M8211-0-0	MAY (MEMORY ARRAY)			2	2	2	-	-	-	-	-	-	-	-
8	E-UA-M8212-0-0	MDT (MEMORY DATA PATH)			1	1	-	1	1	-	-	-	-	1	1
9	E-UA-M8213-0-0	MCN (MEMORY CONTROLLER)			1	1	-	1	1	-	-	-	-	1	1
10	E-UA-M8214-0-0	MSB (MEMORY SBI INTERFACE)			1	1	-	1	1	-	-	-	-	1	1
11	B-MD-7419484-0-0	COVER MEMORY			2	2	-	2	2	-	-	-	-	2	2
12	9006043-01	SCR PH HD PAN #8 - 32 x 1.00			6	6	-	6	6	-	-	-	-	6	6
13	9006660-00	WASH., FLAT .38 o.d. x .19 i.d. x .06			6	6	-	6	6	-	-	-	-	6	6
14	9006563-00	NUT, KEP #8 - 32			6	6	-	6	6	-	-	-	-	6	6
15	1212405-00	CARD GUIDE SINGLE (NATURAL)			20	20	-	20	20	-	-	-	-	20	20
16	1212405-01	CARD GUIDE SINGLE (MAGENTA)			20	20	-	20	20	-	-	-	-	20	20
17	1211630-00	CARD GUIDE			8	8	-	8	8	-	-	-	-	8	8
18	9006611-00	NUT, CAP RELOCK 1/4 - 20			4	4	-	4	4	-	-	-	-	4	4
19	9006071-01	SCR, PH HD PAN#10-32 X .375			4	4	-	4	4	-	-	-	-	4	4
20	9007906-00	WASHER, LOCK SPLIT #10			4	4	-	4	4	-	-	-	-	4	4
21	3613281-04	LABEL, ADHESIVE BACKED PRINT (20 SLOT)			2	2	-	2	2	-	-	-	-	2	2
22	3614744-00	LABEL, WARNING MS780			1	1	-	1	1	-	-	-	-	1	1
TITLE 11780 MOS MEMORY ASSY (MS780)		ASSY NO. E-UA-MS780-0-0		SIZE A	CODE PL		NUMBER MS780-0-0				REV F	ECO NO. MS780-TW006			
SHEET 1 OF 2		DIST													

DEC FORM
DRA 110

Tw

DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS PARTS LIST					QUANTITY VARIATION										
MADE BY W. FISHER		CHECKED D. HEALY		SECTION	MS780-AA	MS780-AB	MS780-BA	MS780-CA	MS780-CB	MS780-DA	MS780-DB	MS780-DC	MS780-DD	MS780-CC	MS780-CD
DATE 6 JUL 77		DATE 28 JUL 77		1											
ENG <i>P. Fisher</i>		PROD <i>P. Fisher</i>		ISSUED SECT.											
DATE 19 Sept 77		DATE 11/4/77		1											
ITEM NO.	DWG NO./PART NO.	DESCRIPTION													
23	9006037-03	SCR, TRUS, PHIL #8-32 X .375			7	7	-	7	7	-	-	-	-	7	7
24	9006634	WASHER, INT TOOTH #8			1	1	-	1	1	-	-	-	-	1	1
25															
26	A-VL-H7102-0-0	H7102 REGULATOR			1	1	-	1	1	-	-	-	-		
27	A-VL-H7103-0-0	H7103 REGULATOR			1	1	-	1	1	-	-	-	-		
28	D-IA-7014234-1E-0	CABLE ±5B and ±12			1	1	-	1	1	-	-	-	-	1	1
29	D-IA-7014212-1C-0	CABLE AC, DC LO			1	1	-	1	1	-	-	-	-	1	1
30	D-IA-7014529-0K-0	CABLE POWER +5 MEMORY (RED)			2	2	-	2	2	-	-	-	-	2	2
31	D-IA-7014250-0K-0	CABLE POWER RTR MEMORY (BLACK)			2	2	-	2	2	-	-	-	-	2	2
32	1214314	JUMPERS			5	5	-	5	5	-	-	-	-	5	5
33	9007797-00	WASHER, LOCK, SPLIT			4	4	-	4	4	-	-	-	-	4	4
34	9006566-00	NUT, HEX, 1/4 - 20			4	4	-	4	4	-	-	-	-	4	4
35	B-IA-7418724-0-0	PLATE, STUD P.C. BOARD			2	2	-	2	2	-	-	-	-	2	2
36	B-MD-7418738-0-0	PLATE, P.C. BOARD			2	2	-	2	2	-	-	-	-	2	2
37	C-MD-7419454-0-0	COVER, MEMORY BACKPLANE			1	1	-	1	1	-	-	-	-	1	1
38	3615087-02	LABEL, DANGER			1	1	-	1	1	-	-	-	-	1	1
39	1700087-00	COAX RIBBON CABLE (SBI) (4 IN)			6	6	-	6	6	-	-	-	-	6	6
40	7014213-0K	CABLE, OVER TEMP.			1	1	-	1	1	-	-	-	-	1	1
41	9008072-00	WASHER, LOCK EXT TOOTH #8			6	6	-	6	6	-	-	-	-	6	6
42	E-UA-M8210-0-0	MAY (MEMORY ARRAY)			-	-	-	1	1	1	2	4	8	2	2
43	9006646	WASHER, FLAT			2	2	-	2	2	-	-	-	-	2	2
44	3614743-00	LABEL, MEMORY POWER SUPPLY			1	1	-	1	1	-	-	-	-	1	1
TITLE 11780 MOS MEMORY ASSY (MS780)		ASSY NO. E-UA-MS780-0-0		SIZE A	CODE PL		NUMBER MS780-0-0				REV F	ECO NO.			
SHEET 2 OF 2		DIST													

DEC FORM
DRA 110

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2-0-087SW 2

NOTE:
 * = OR BLANK BOARD
 △ ONLY USE WHEN NO SFT ON FAR END OF BUS. OTHERWISE USE BLANK BOARD.
 △ BASIC SYSTEM USES 128K BYTE OR 2 M82H BOARDS (SLOTS 17 & 16). THE BALANCE OF THE M82H SLOTS SHOULD BE BLANK BOARDS. FOR LARGER MEMORY, REPLACE BLANK BOARDS WITH M82H CONTINUOUSLY FROM SLOT 15 TO DESIRED SLOT FOR MAXIMUM MEMORY DESIRED. SLOT 2 IS THE LAST THAT WILL ACCEPT AN M82H.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
D	M9040 TRM △	M8210 MAY *	M8210 MAY *	M8210 MAY *	M8210 MAY *	M8210 MAY *	M8210 MAY *	M8210 MAY *	M8210 MAY *	M8210 MAY *	M8210 MAY *	M8210 MAY *	M8210 MAY *	M8210 MAY *	M8210 MAY △	M8210 MAY *	M8210 MAY	M8212 MDT	M8213 MCN	M8214 MSB
A																				
B																				
C																				
D																				
E																				
F																				

3840KB	3584KB	3328KB	3072KB	2816KB	2560KB	2304KB	2048KB	1792KB	1536KB	1280KB	1024KB	768KB	512KB	256KB	0KB	3840KB	3584KB	3328KB	3072KB	2816KB	2560KB	2304KB	2048KB	1792KB	1536KB	1280KB	1024KB	768KB	512KB	256KB
TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	

REV.	CHG.	DATE	BY
1	1	10/1/77	E. ANTON
2	2	10/1/77	E. ANTON

DRN. AFM	10-1033	FIRST USED ON	VAX 11780
CHK'D	10-183	TITLE	MODULE UTILIZATION
ENG.	10-183	NUMBER	MOS MEMORY
PROJ. ENG.	10-183	REV.	A
PROD. THOMAS	10/1/77		
NEXT HIGHER ASSY.			
8-DD-MS780-0			
SCALE	11		
SHEET 1 OF 1			

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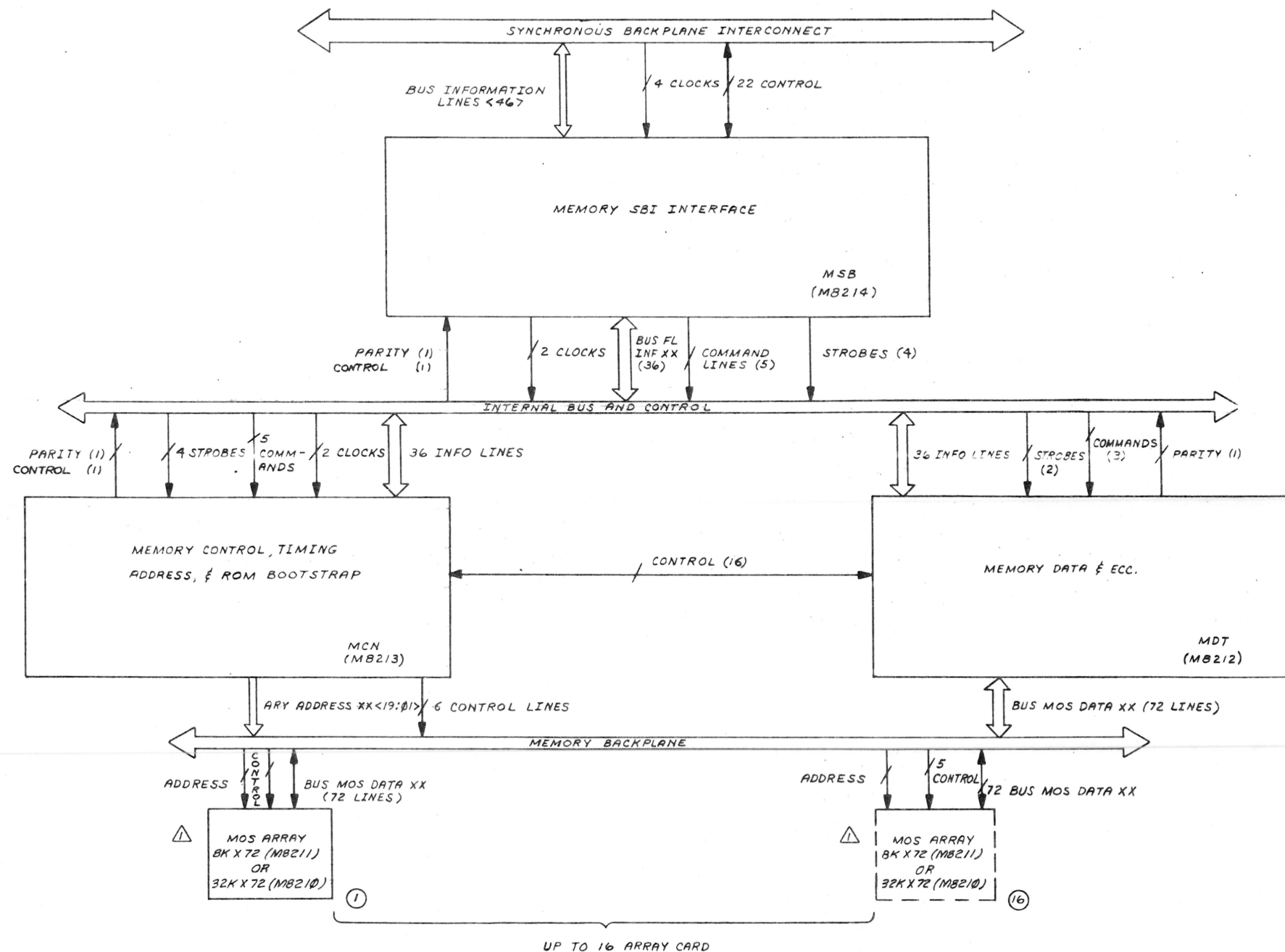
D

C

B

A

REV.	CHG.	NO.	DATE	BY	CHK.
1		MS780-TW003	2 AUG 78	E. ANTON	
2		MS780-TW004	6 SEPT 78	E. ANTON	
3		MS780-TW005	6 OCT 78	E. ANTON	
4		MS780-TW006	8 NOV 79	E. ANTON	



⚠ MB211 AND MB210 ARRAY CARDS CANNOT BE MIXED IN THE SAME BACKPLANE.

(MEMORY CONTROLLER)

DRN. J. Vincent	8-1-77	FIRST USED ON	VAX 11780
CHK'D J. Vincent	10-2-77	TITLE	MS780 MOS MEM. BLOCK DIAG.
ENG. J. Vincent	1-2-78	SCALE	1/4" = 1"
PROJ. ENG. J. Vincent	1-2-78	SHEET	1 OF 4
NEXT HIGHER ASSY.	B-DD-MS780-0	SIZE	D
CODE	BD	NUMBER	MS780-0-3
REV.	B		

D

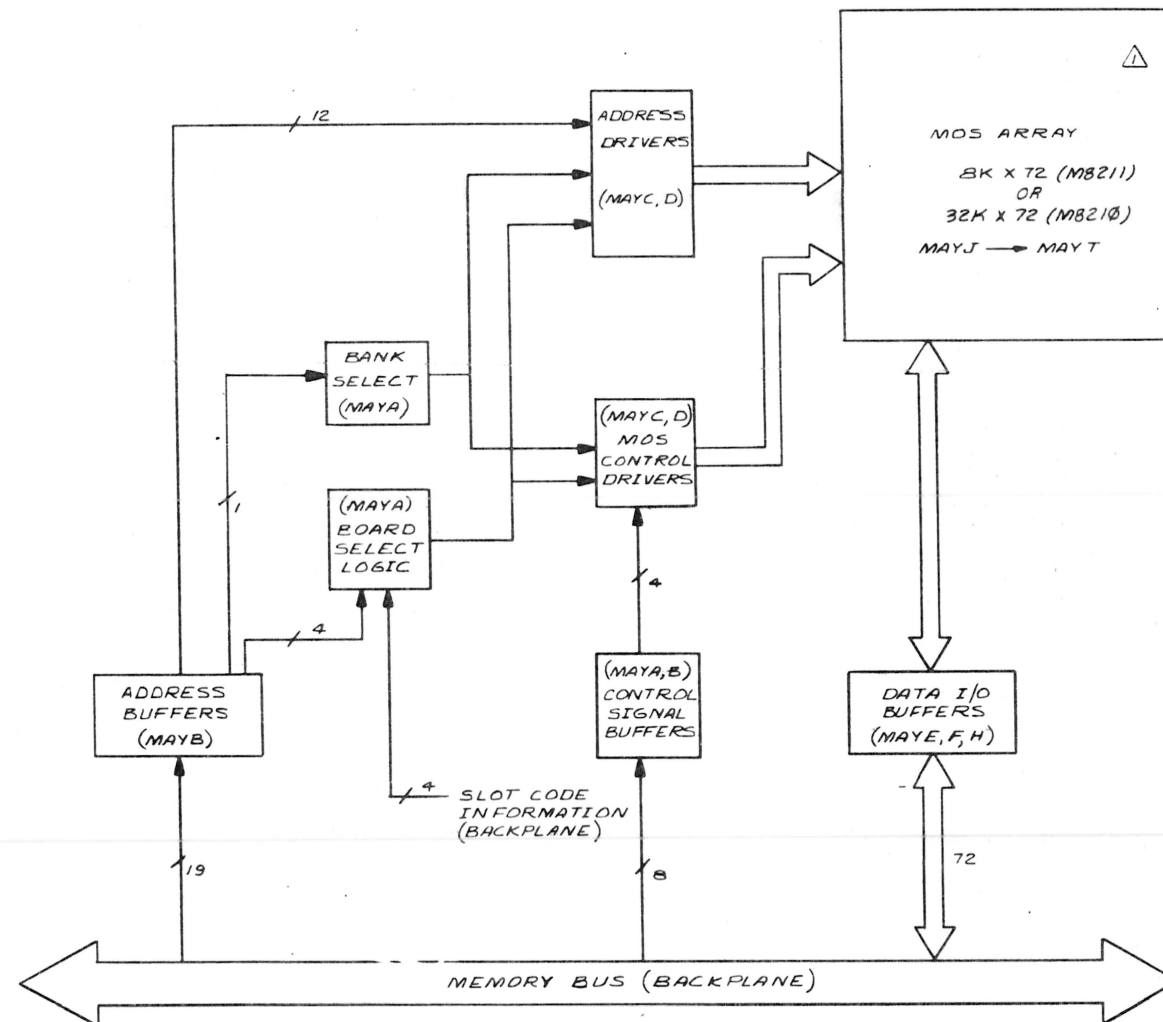
C

B

B

A

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△ M8211 AND M8210 CANNOT BE MIXED IN THE SAME BACKPLANE.

REVISIONS		
CHK	CHANGE NO.	REV.

(MOS ARRAY CARD)

TITLE		SIZE CODE	NUMBER	REV.
MS780 MOS MEM, BLKDIAG		D BD	MS780-0-3	B
SCALE		SHEET 2 OF 4	DIST.	

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ERROR SYNDROME (HEX)	LONG WORD	BIT IN ERROR
01	CHECK BYTE	C00
02	↑	C01
04	↓	C02
08	↓	C03
10	CHECK BYTE	C04
19	LOWER	01
1A	↑	02
1C	↓	04
1F	LOWER	07
20	CHECK BYTE	C05
38	LOWER	00
3B	↑	03
3D	↓	05
3E	LOWER	06
40	CHECK BYTE	C06
49	LOWER	09
4A	↑	10
4C	↓	12
4F	↓	15
51	↓	17
52	↓	18
54	↓	20
57	↓	23
5B	↓	24
5B	↓	27
5D	↓	29
5E	↓	30
68	↓	08
6B	↓	11
6D	↓	13
6E	↓	14
70	↓	16
73	↓	19
75	↓	21
76	↓	22
79	↓	25
7A	↓	26
7C	↓	28
7F	LOWER	31

ERROR SYNDROME (HEX)	LONG WORD	BIT IN ERROR
80	CHECK BYTE	C07
89	UPPER	01
8A	↑	02
8C	↓	04
8F	↓	07
91	↓	09
92	↓	10
94	↓	12
97	↓	15
98	↓	16
9B	↓	19
9D	↓	21
9E	↓	22
AB	↓	00
AB	↓	03
AD	↓	05
AE	↓	06
B0	↓	08
B3	↓	11
B5	↓	13
B6	↓	14
B9	↓	17
BA	↓	18
BC	↓	20
BF	↓	23
C1	↓	25
C2	↓	26
C4	↓	28
C7	↓	31
E0	↓	24
E3	↓	27
E5	↓	29
E6	UPPER	30

NOTE: 1. ALL ERROR SYNDROMES IN THIS TABLE HAVE AN ODD NUMBER OF BITS EQUAL TO A "1" AND ARE CORRECTABLE
EXAMPLE: SYNDROME 3B = 00111000
THIS SYNDROME HAS 3 "1"'S

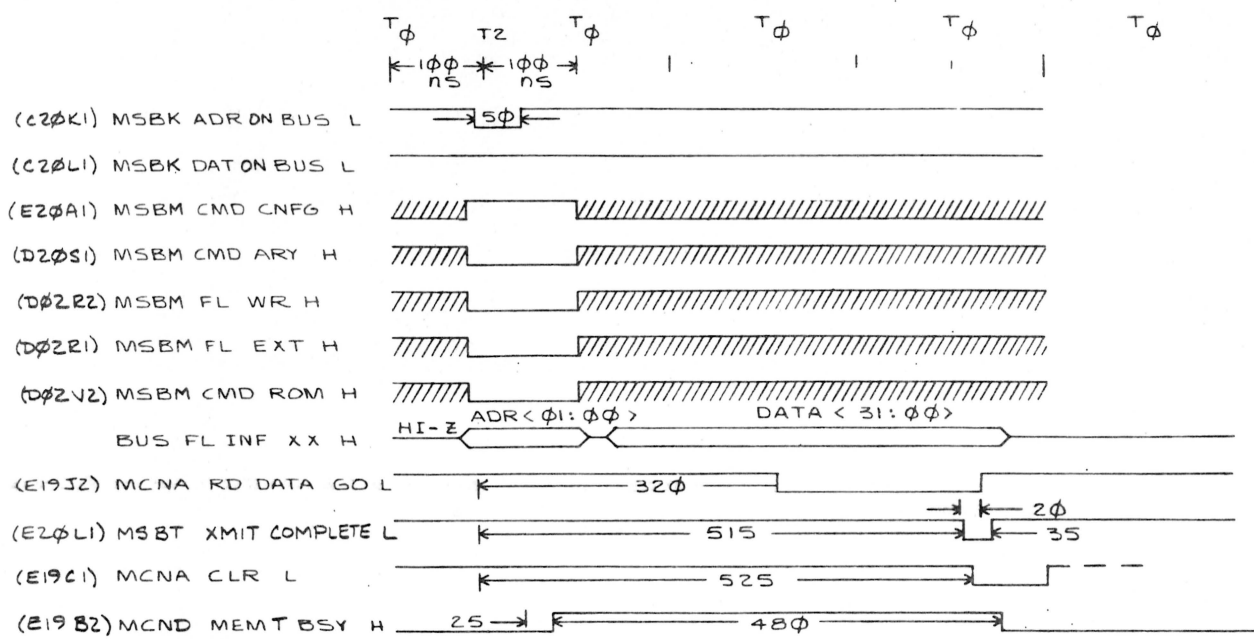
NOTE: 2. ERROR SYNDROMES WITH AN EVEN NUMBER OF BITS EQUAL TO "1" MEAN DOUBLE BIT ERROR
DOUBLE BIT ERRORS ARE NOT CORRECTABLE

(MEMORY CONTROLLER SYNDROME TABLE)

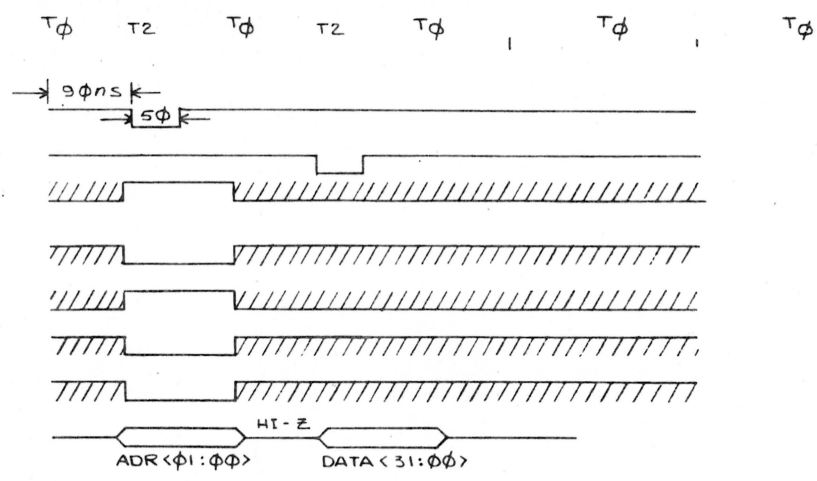
REVISIONS		
CHK	CHANGE NO.	REV.

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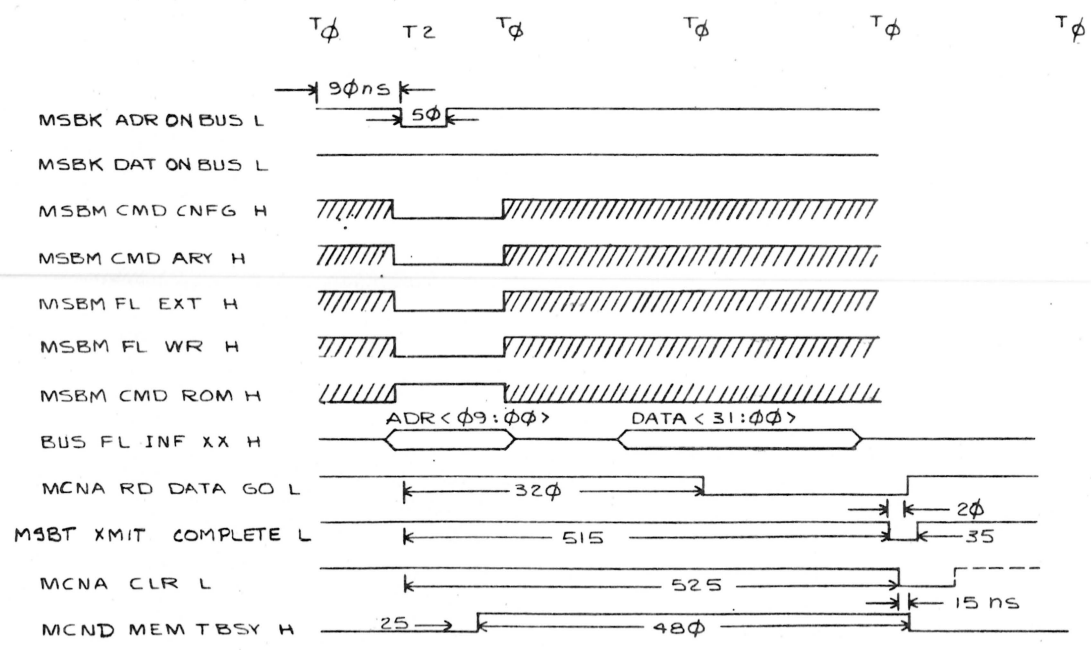
READ CONFIGURATION REGISTER CYCLE



WRITE CONFIGURATION REGISTER CYCLE



READ ROM CYCLE



(MEMORY CONT. CONFIG, & ROM CYCLES)

REVISIONS		
CHK	CHANGE NO.	REV.

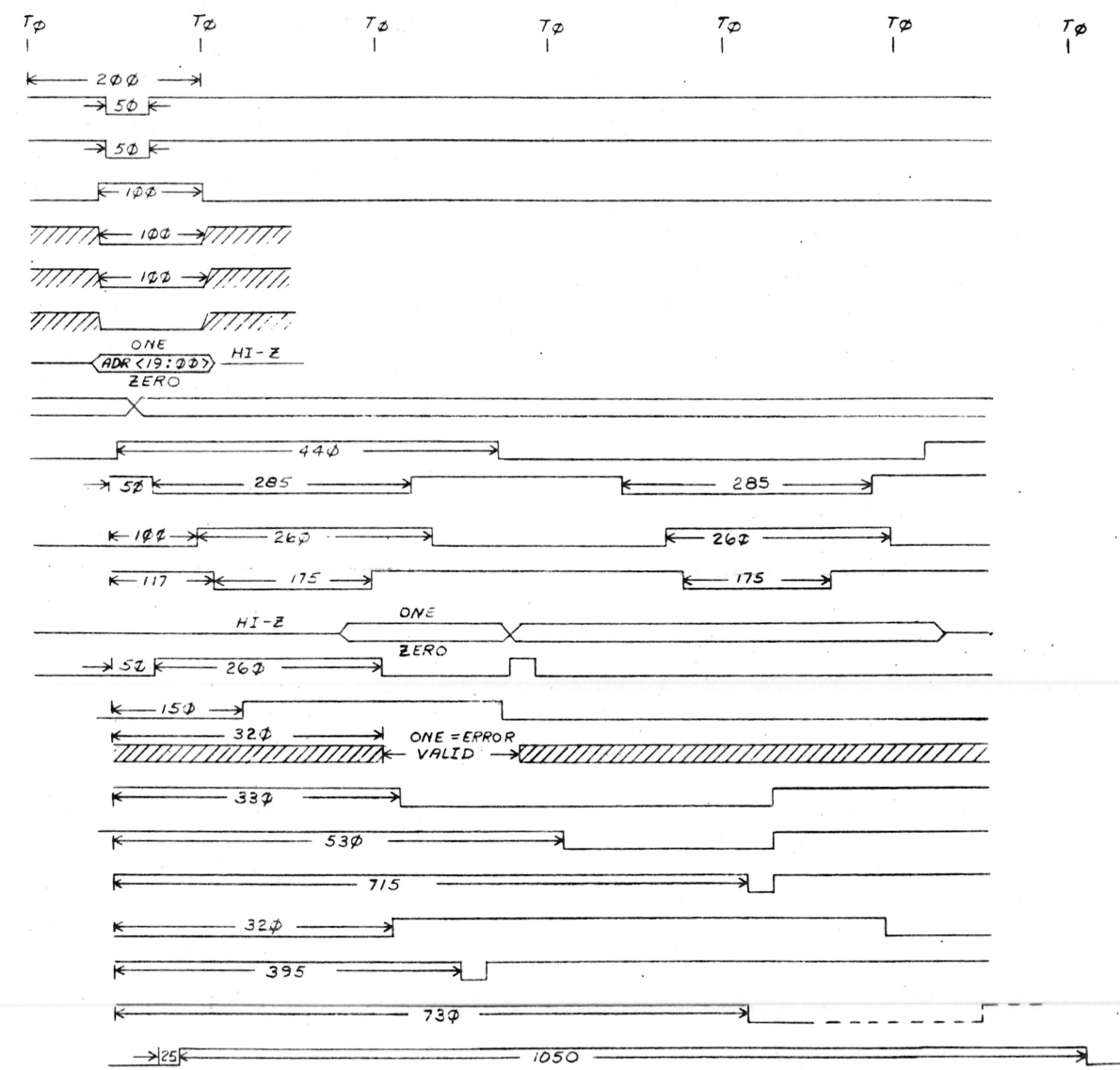
DRN. <i>AFM</i>	8-7-77	FIRST USED ON	VAX 11/780
CHK'D <i>[Signature]</i>	10-7-77	TITLE	MS780 MOS
ENG. <i>[Signature]</i>	12-7-77	NUMBER	MEM TIMING DIAG
PROJ. ENG. <i>[Signature]</i>	12-7-77	SCALE	D.T.D. MS780-0-4
PROD. <i>[Signature]</i>	12-7-77	SHEET	1 OF 5
NEXT HIGHER ASSY:		DIST.	
B-DD-MS780-0		REV.	

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REV. 4-0-0 MS780-0-4 DTD 2

ARRAY READ CYCLE WITHOUT ERROR

ARRAY READ CYCLE WITH ERROR



(MEMORY CONTROLLER ARRAY READ CYCLE)

REVISIONS		
CHK	CHANGE NO.	REV.

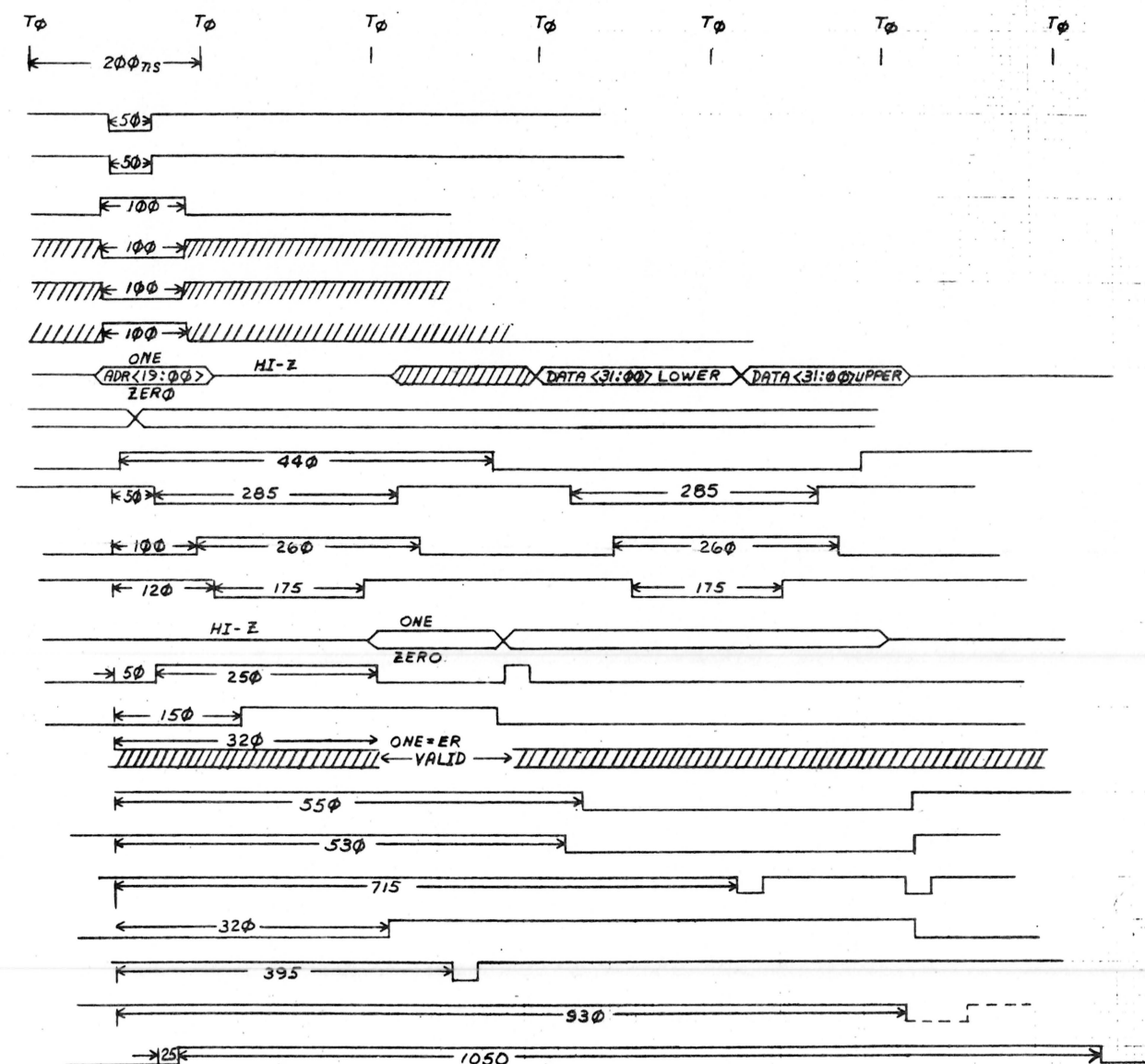
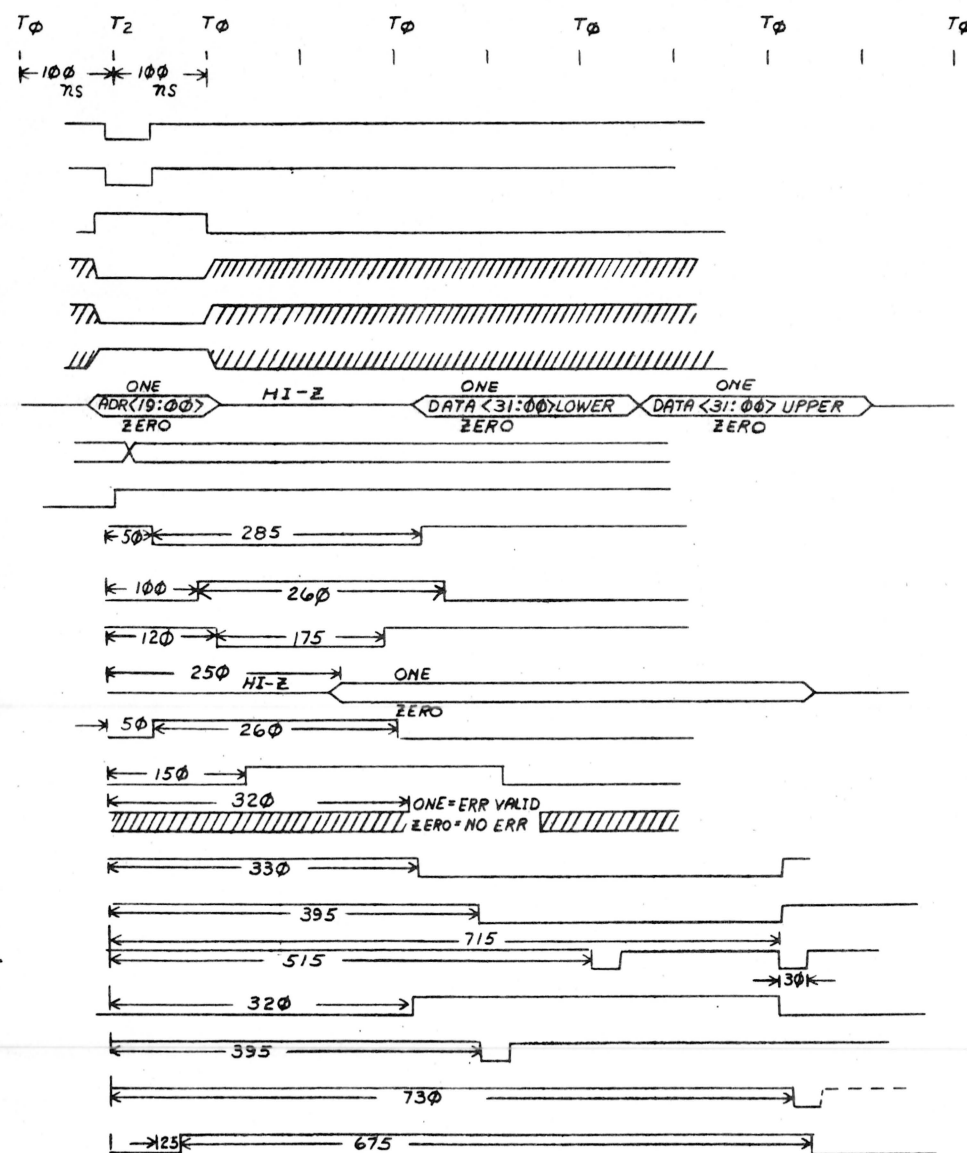
TITLE		SIZE CODE	NUMBER	REV.
MS780 MOSMEM.TIM.DIAG.		DTD	MS780-0-4	
SCALE		SHEET	2 OF 5	DIST.

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ARRAY READ EXTENDED CYCLE WITHOUT ERROR

ARRAY READ EXTENDED CYCLE WITH ERROR

(C20K1) MSBK ADR ON BUS L
(C20S1) MSBK MEM GO L
(D20S1) MSBM CMD ARY H
(D20V2) MSBM CMD ROM H
(D20R2) MSBM FL WR H
(D20R1) MSBM FL EXT H
BUS FL INF XX H
MCNE ARY ADR XX H
(D19R1) MCNC READ H
(C19K1) MCND RAS L
(C19F1) MCND MUX CTRL H
(C19J1) MCND CAS L
BUS MOS DATA XX H
(D19M1) MCND ARY DAT CK H
(E19B1) MCND XMT DAT CK H
(E19P1) MDTD RD ER H
(E19F1) MCNA RD DATA EN L
(E19J1) MCNA RD DATA GO L
(E20L1) MSBT XMIT COMPLETE L
(E19D1) MCNC RD EN L
(D19K2) MCNC TAG CLK L
(E19C1) MCNA CLR L
(E19B2) MCND MEM T BSY H



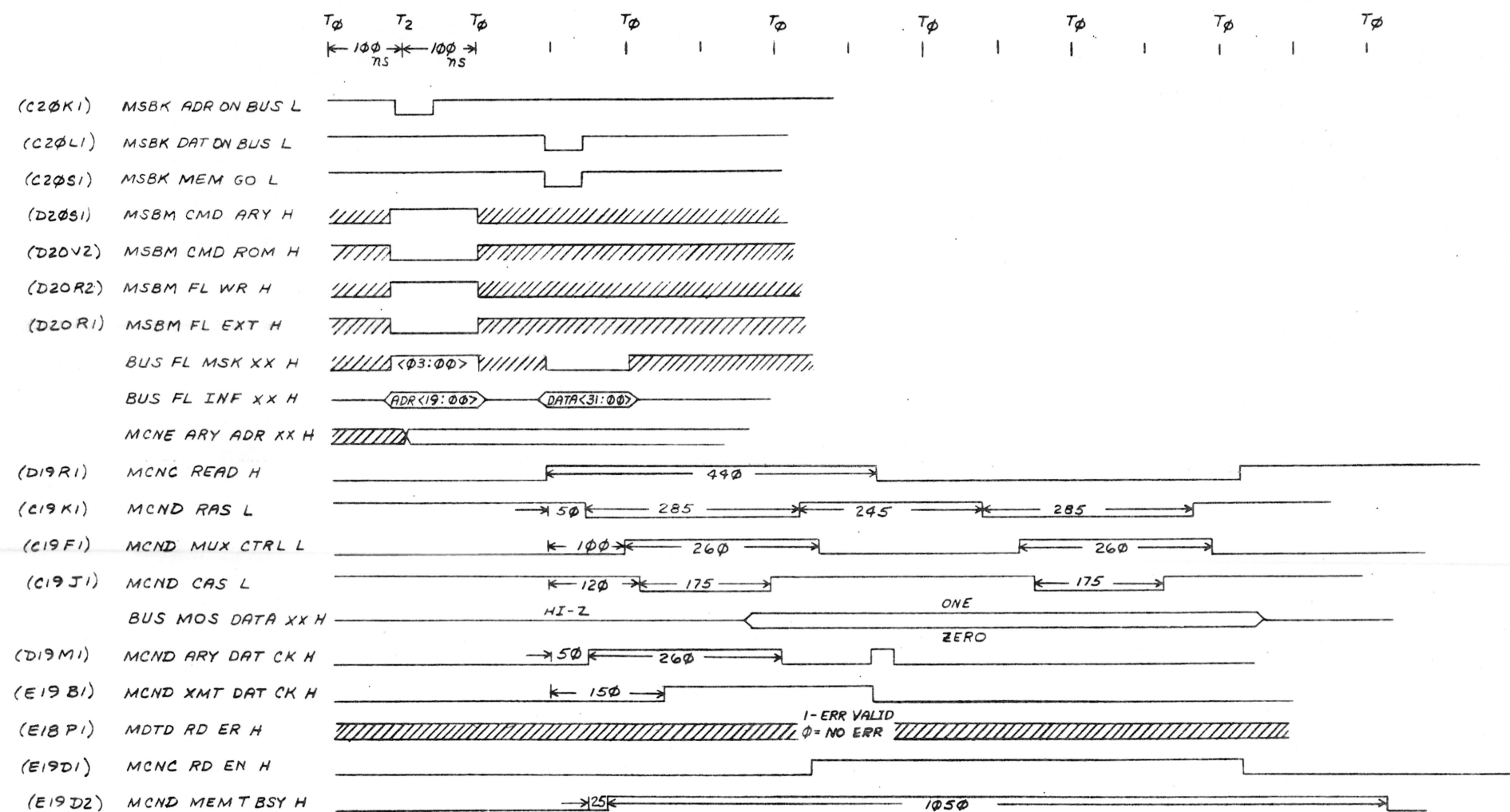
(MEMORY CONTROLLER ARRAY READ EXTENDED CYCLE)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE CODE	NUMBER	REV.
MS780 MOS MEM. TIM DIAG	D TD	MS780-0-4	
SCALE	SHEET 3 OF 5	DIST.	

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REV. 4-0-082SW DTD 2

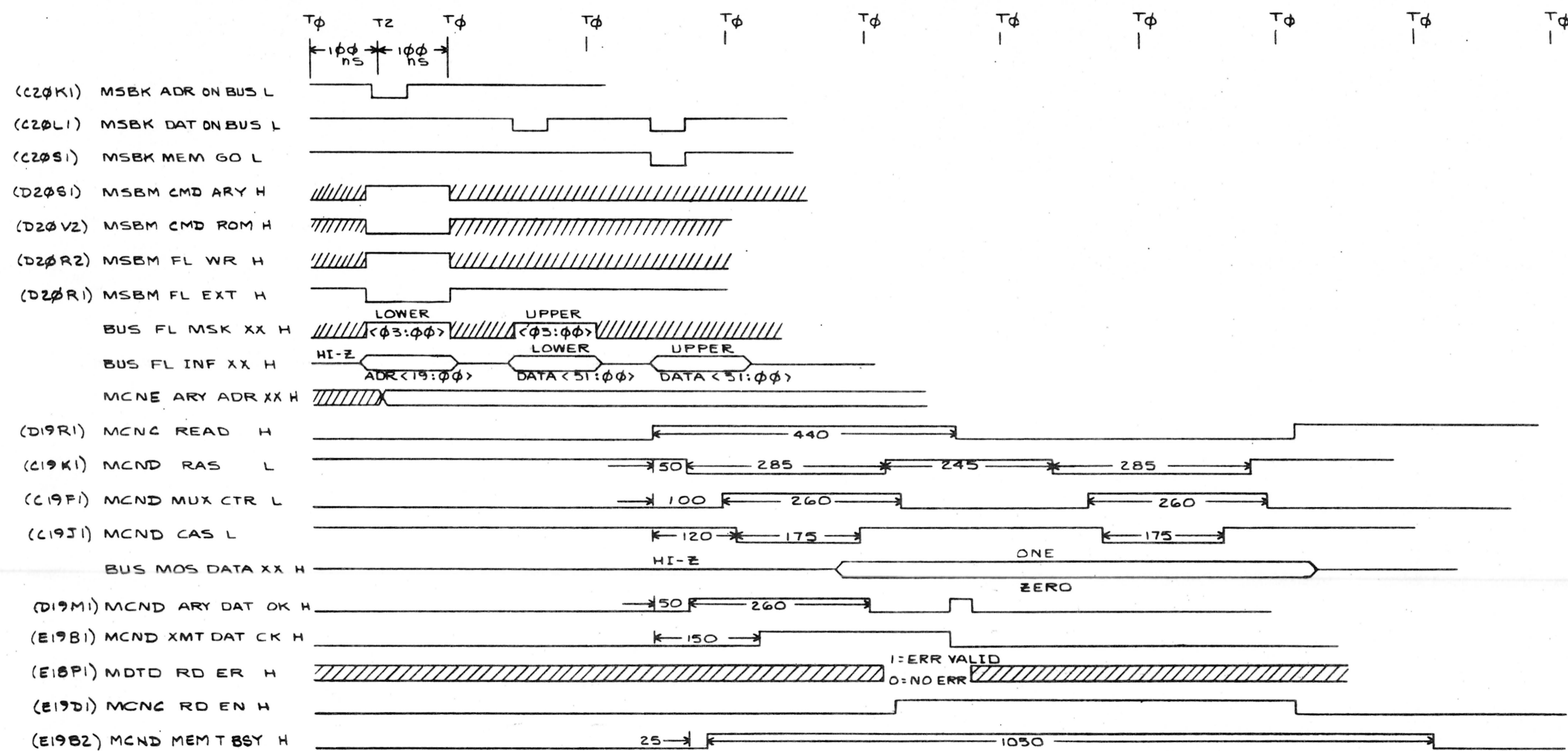


(ARRAY WRITE MASKED CYCLE)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE CODE	NUMBER	REV.
MS780 MOS MEM. TIM. DIAG.	DTD	MS780-0-4	
SCALE	SHEET	OF	DIST.
	4	5	

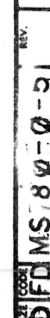
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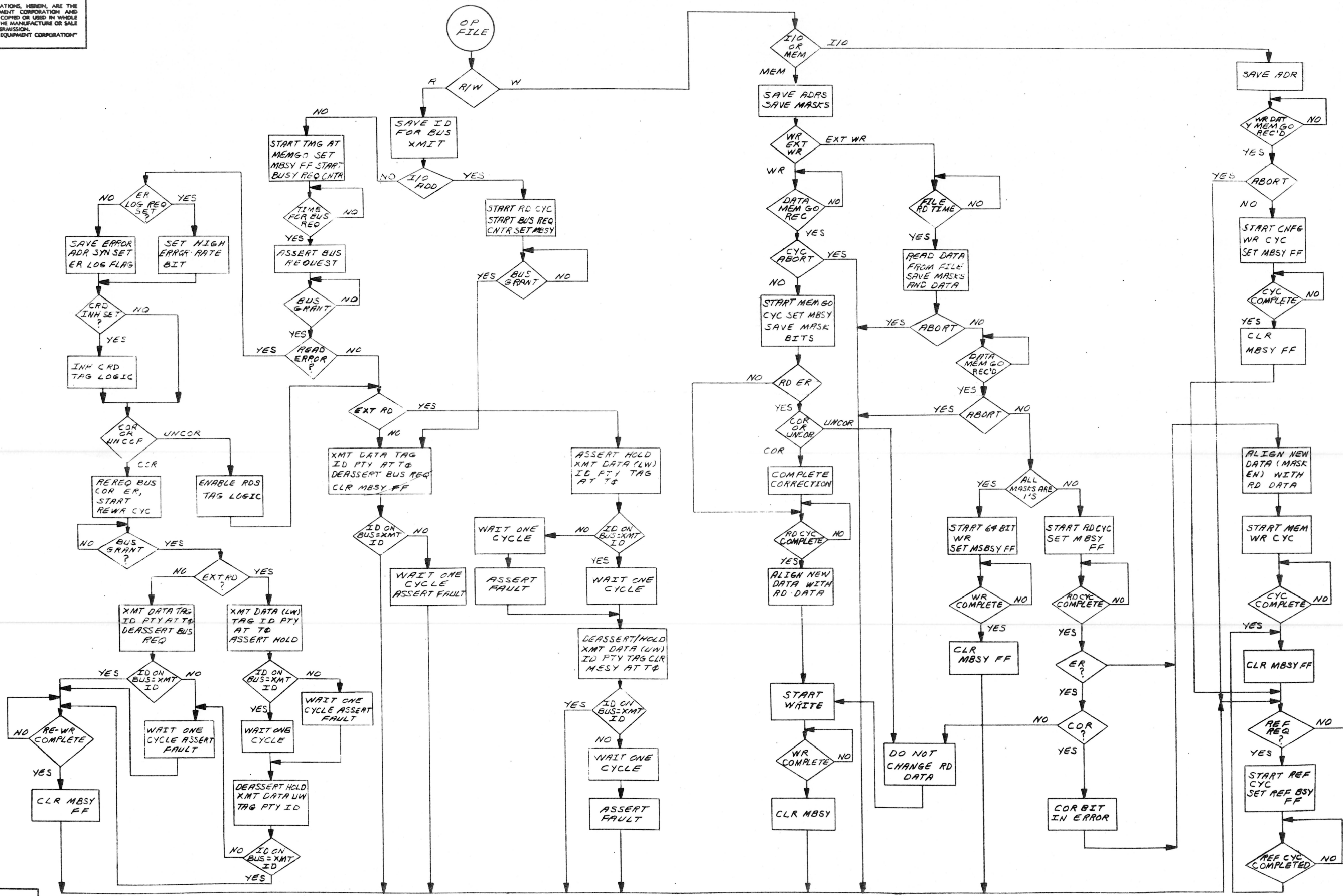
(ARRAY EXTENDED WRITE MASKED CYCLE)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE CODE	NUMBER	REV.
MS780 MOS MEMBLK.DIAG	D	MS780-0-4	
SCALE	SHEET	OF	DIST.
1/4	5	5	



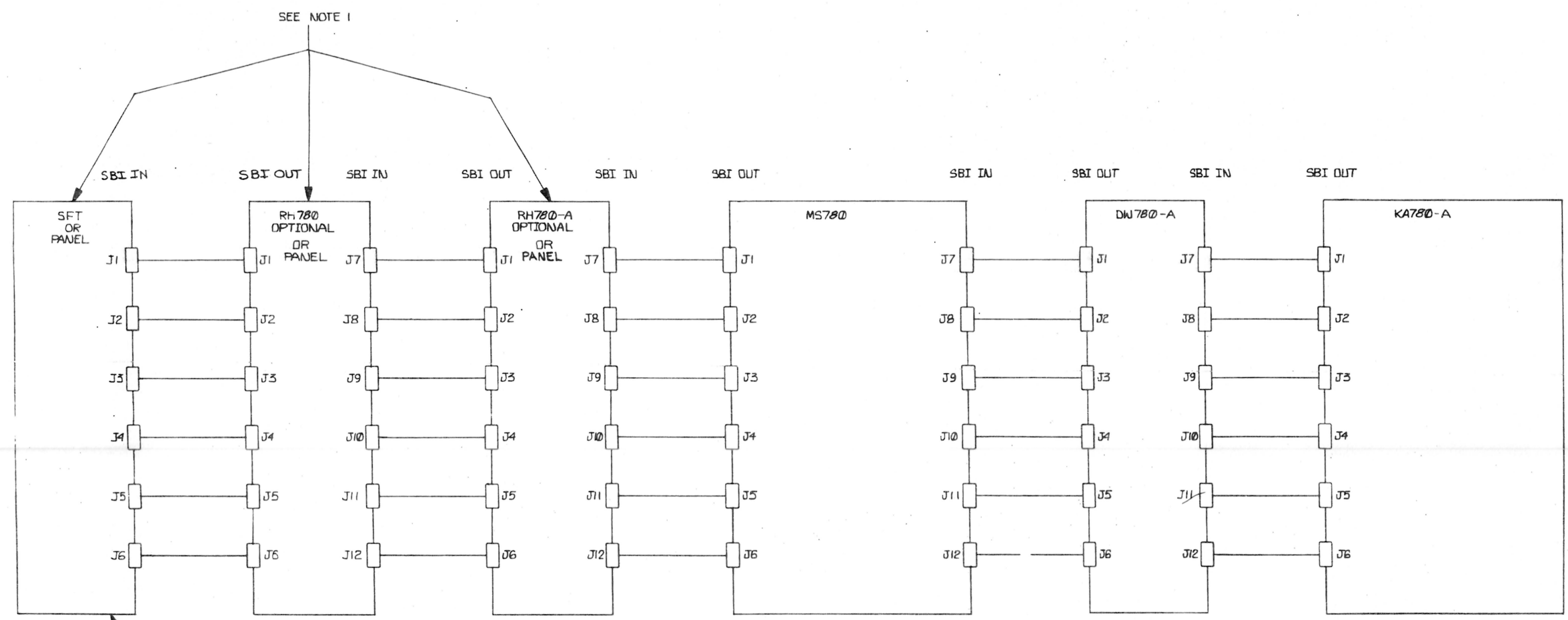
DATE: 2-11-77	PRINTED ON VAX 11780	CLASSIFIED
CHK'D: [Signature]	TITLE	
ENG: [Signature]	MS780 MOS MEM	
PROJ. ENG: [Signature]	FLOW DIAG	
PROD: [Signature]		
NEXT HIGHER ASSY.		
B-DD-MS780-0	SIZE CODE NUMBER	REV.
SCALE	D FD MS780-0-5	
SHEET 1 OF 2	DSIT.	



REVISIONS		
CHK	CHANGE NO.	REV.

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8 7 6 5 4 3 2 1
S-0-082111
11780-0-3
2



- NOTES:
- 11780-C SYSTEM CONSISTS OF
 - A. KA780-A
 - B. DW780-A
 - C. MS780
 - D. SFT (# M9043)
 - E. 2 DUMMY PANELS (# 7418973)
 - 11780-D SYSTEM CONSISTS OF
 - A. KA780-A
 - B. DW780-A
 - C. MS780
 - D. RH780-A
 - E. RH780
 - F. SFT
 - SBI CABLE CONNECTIONS TO SFT FROM ADJACENT BACKPLANE ARE ALWAYS 1700087-1 (QUANTITY 6) OTHER SBI CABLES ARE 1700087-0

REV.	CHG. NO.	DATE	BY	CHK.
1	11780-TW002	20 SEP 78	E. ANTON	
2	11780-TW006	11/2/78	R. CHUSMAE	
3	11780-TW006	11/2/78	R. CHUSMAE	
4	11780-TW006	11/2/78	R. CHUSMAE	

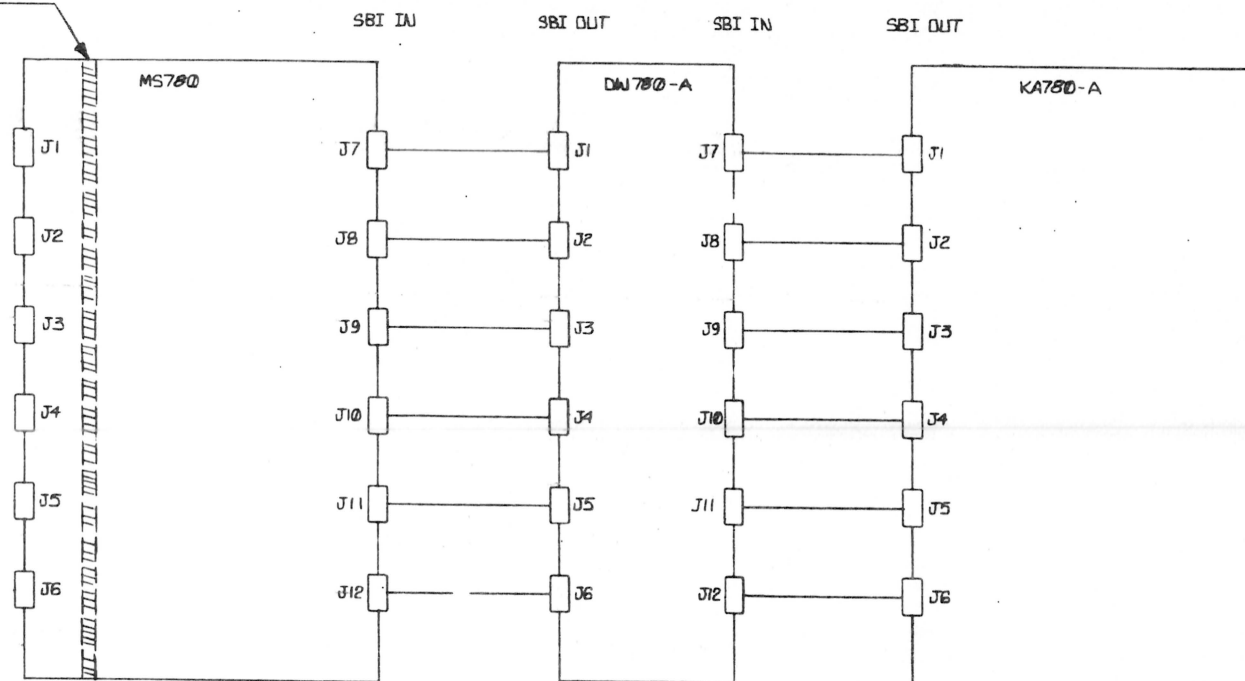
(BACKPLANE S.B.I. INTERCONNECT)

DRN. E. TAYLOR	26 JUL 77	FIRST USED ON	11780
CHK'D D. XONG	1 AUG 77	TITLE	11780 SUB SYSTEM INTERCONN.
ENG'D A. T. S.	18 SEP 77	SIZE	D
PROJ. ENG. J. H. S.	18 SEP 77	CODE	IC
PROD. R. H. S.	11-18-77	NUMBER	11780-0-3
NEXT HIGHER ASSY.		REV.	B
SCALE		DIST.	
SHEET	1 OF 8		

TW 1

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SEE NOTE 1



NOTES:

- 1) 11780 CU+CV SYSTEM CONSISTS OF
 - A. KA780 A
 - B. DW780 A
 - C. MS780
 - D. TRM (M9040) MOUNTED IN SLOT* 1 OF MS780 BACKPLANE.

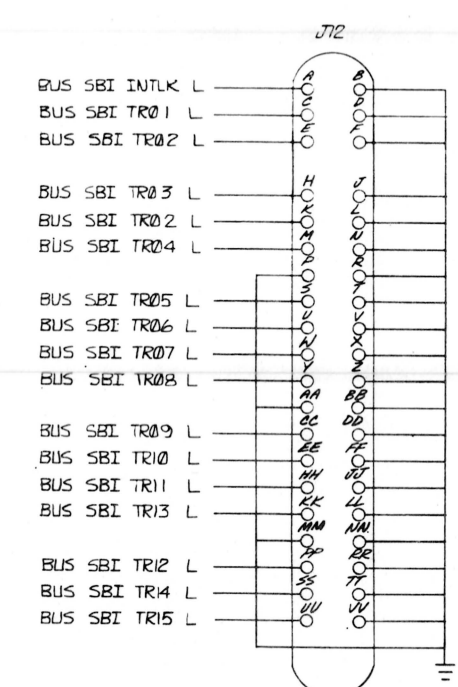
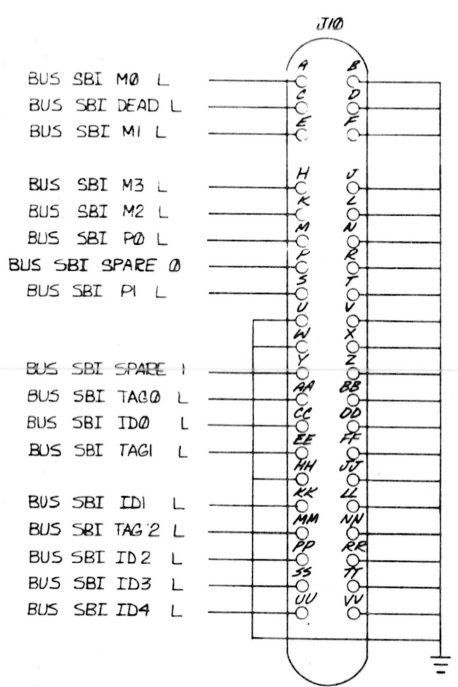
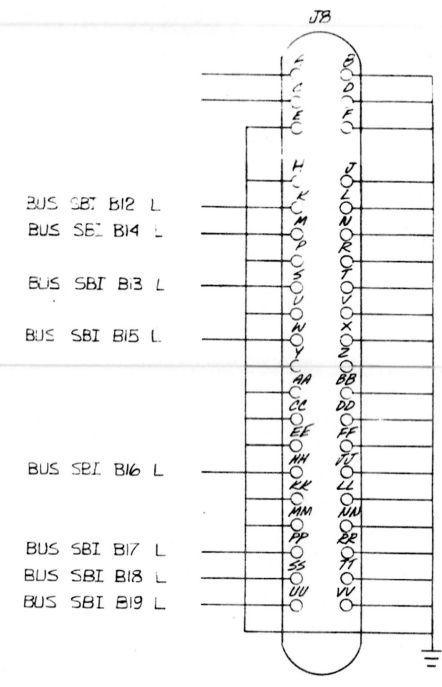
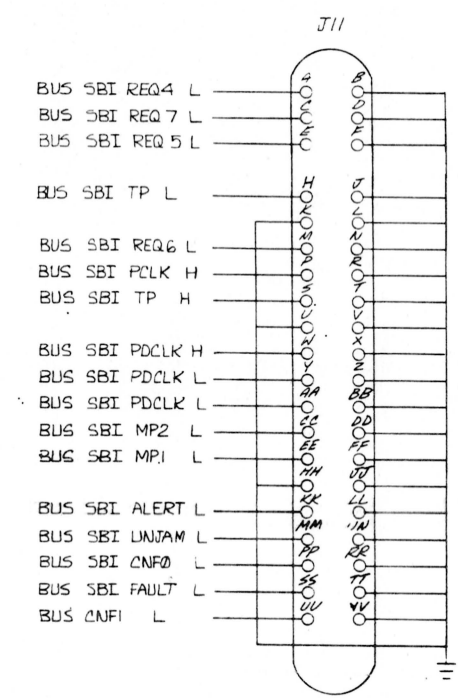
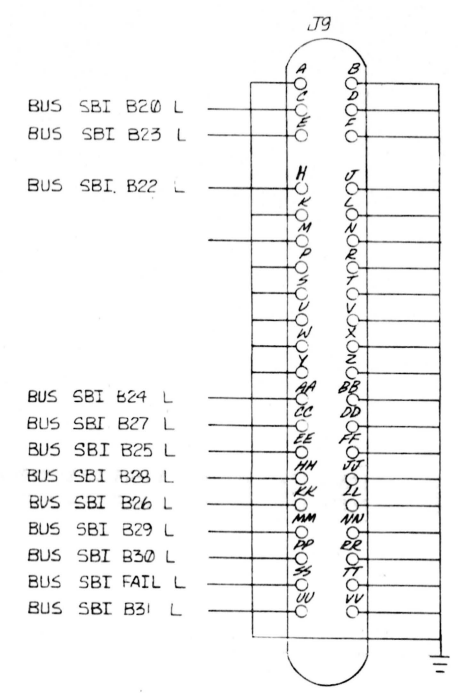
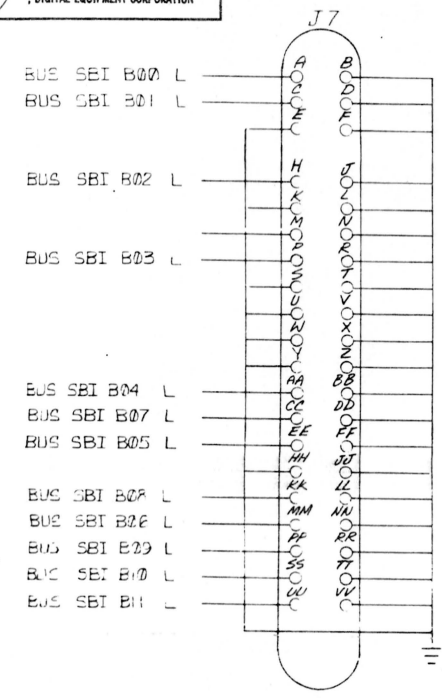
THIS SHEET FOR
CU+CV VARIATIONS
ONLY

(BACKPLANE S.B.I. INTERCONNECT)

DRN. <i>Reg Lennon</i>	9/17/79	FIRST USED ON	11780
CHK'D		TITLE	11780 SUB SYSTEM INTERCONN.
ENG.			
PROJ. ENG.			
PROD.			
NEXT HIGHER ASSY.			
2-DD-11780-0		SIZE CODE	D
SCALE		NUMBER	11780-0-3
SHEET 2 OF 8		DIST.	
			TW 1

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D
C
B
A



REV.	CHANGE NO.
1	1

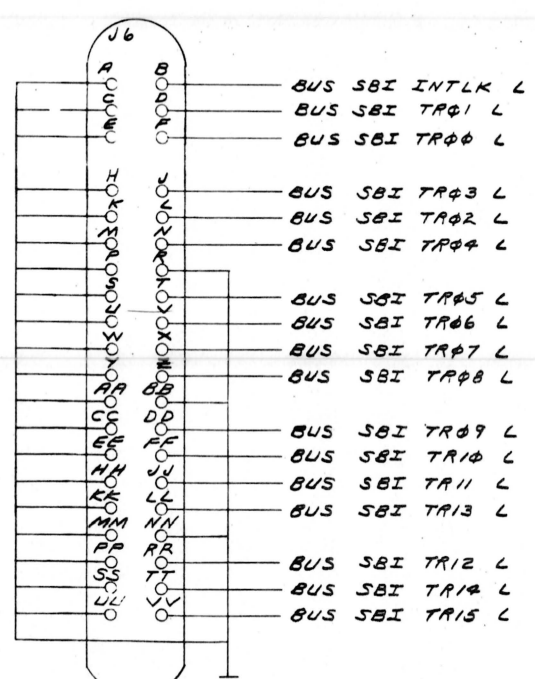
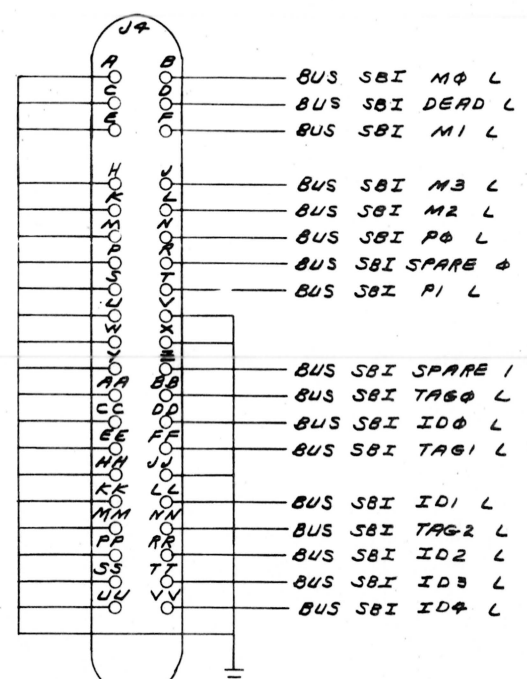
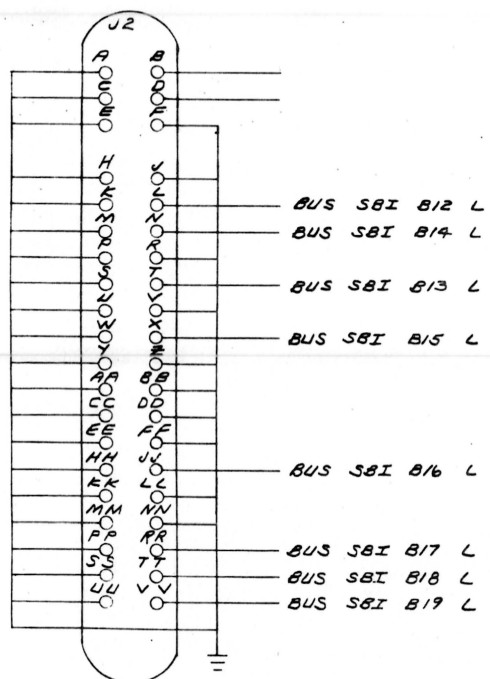
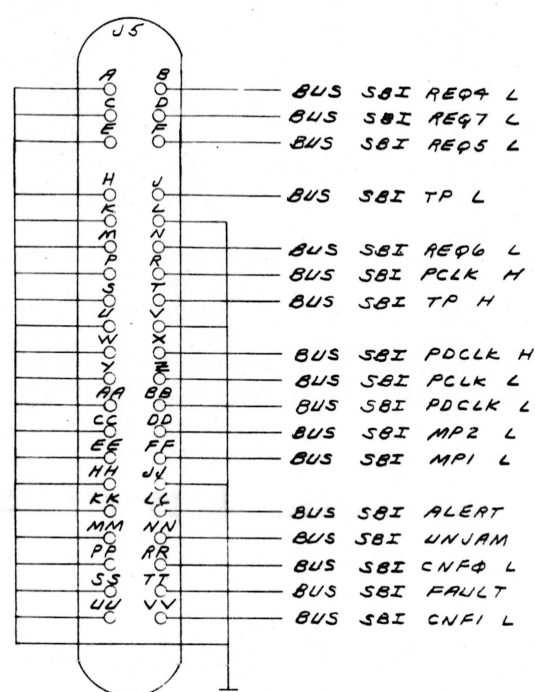
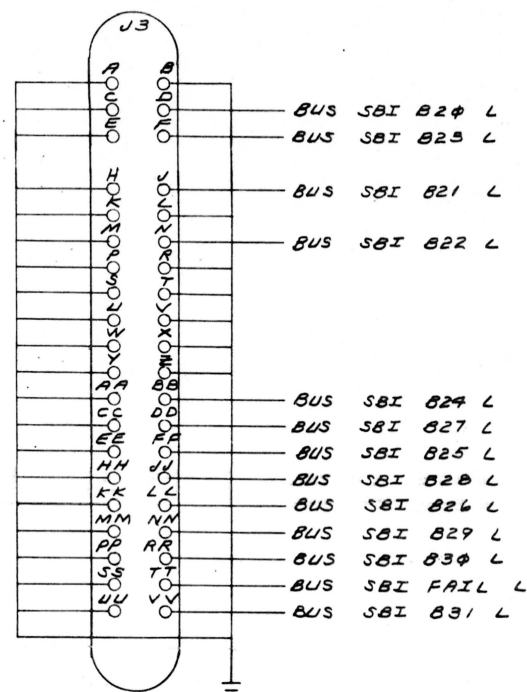
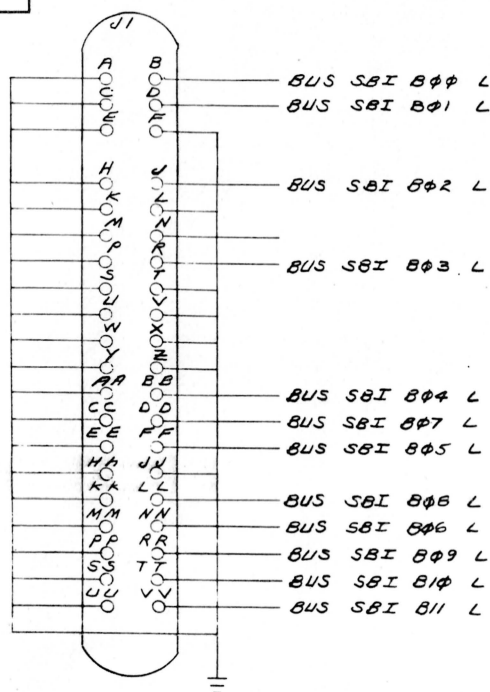
DEC FORM NO. 1-68

(S.B.I. IN)

DRN. E. Taylor	25 JUL 77	FIRST USED ON	11780
CHK'D J. Hays	16 AUG 77	TITLE	11780 SUB SYSTEM INTERCONNECT
ENG. Ed. D. Smith	18 SEP 77	PROD. R. Z. Smith	11-18-77
PROJ. ENG. J. Hays	15 SEP 77		
NEXT HIGHER ASSY.			
B-DD-11780			
SCALE	11	SIZE CODE	D IC 11780-0-3
SHEET	3 OF 8	DIST.	

TW 1

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(S.B.I. OUT)

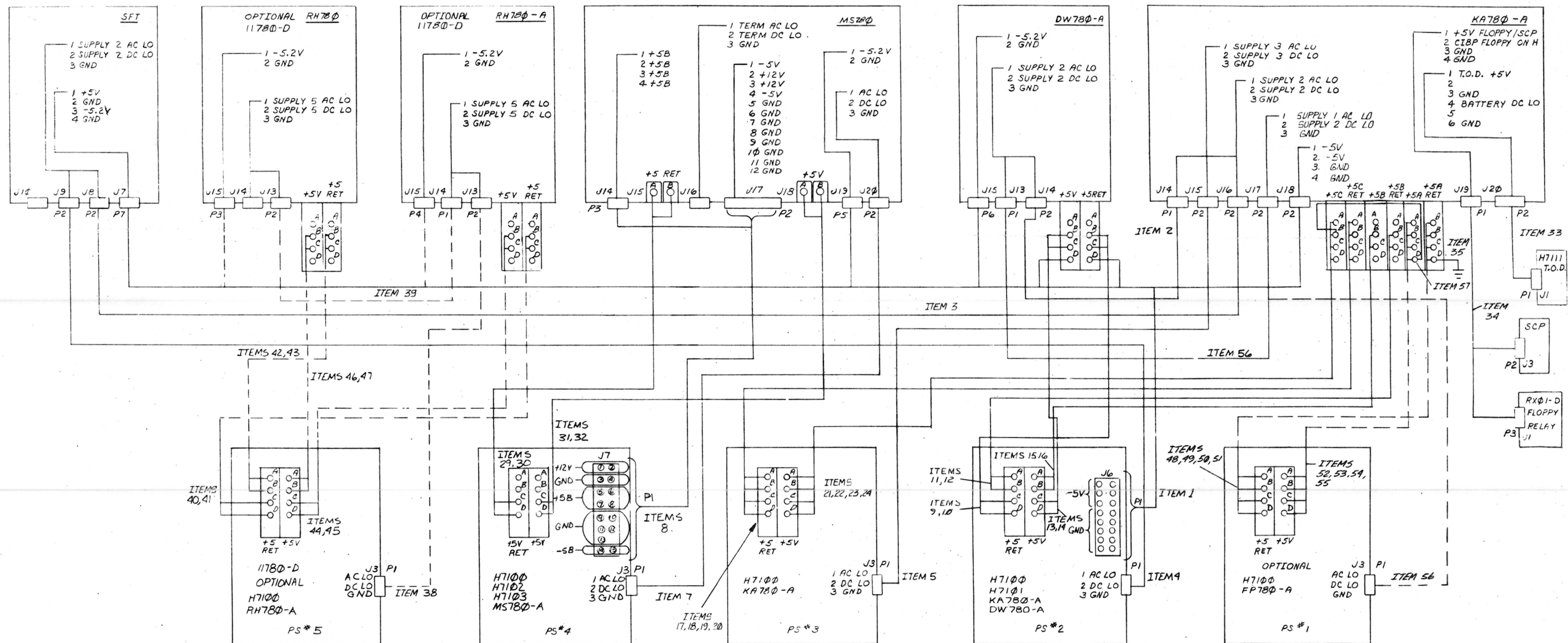
DRN. 6740R	25 JUL 77	FIRST USED ON	11780	digital		
CHK'D. D. G. G. G.	16 AUG 77	TITLE	11780 SUB SYSTEM INTERCONNECT			
ENG. S. D. A. H.	16 SEP 77					
PROJ. ENG. J. H. H.	16 SEP 77					
PROD. R. Z. H. D.	11-18-77					
NEXT HIGHER ASSY.						
SCALE	+	SIZE CODE	D	NUMBER	11780-0-3	REV. B
SHEET	4 OF 8	DIST.				

REV. 3
11780
D

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NOTES:

1.) ITEM # 5 ARE SHOWN FOR REFERENCE IN LOCATING CABLE DESTINATIONS ONLY USING SHEET 6 D-1C-11780-0-3



SEE SHEET #6 FOR REF. PARTS LIST.

(BACKPLANE D.C. INTERCONNECT)

DRN. E. TAKOR	25 JUN 77	FIRST USED ON	11780	digital
CHK'D D. Hough	16 AUG 77			
ENG. E. D. Aron	8 OCT 77	TITLE	11780 SUB SYSTEM	
PROJ. ENG. J. H. Hough	16 OCT 77		INTERCONNECT	
PROD. R. H. Hough	11 NOV 77			
NEXT HIGHER ASSY.				
		SIZE CODE	NUMBER	REV.
SCALE	1:1	D	I C 11780-0-3	B
SHEET	5 OF 8	DIST.		

TW 1

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11780 - C & D (SEE SHEETS 708 FOR C/CV VARIATIONS)

REF ITEM NUMBER	PART NUMBER	DESCRIPTION	FROM	TO	REMARKS
1	7015073-0-0	HARNESS-5V TERMINATOR	HARNESS P1	PS#2-J6	-5V GND
			HARNESS P2	KA780-J18	
			HARNESS P5	MS780-J19	
			HARNESS P6	DW780-J15	-5V, GND
			HARNESS P7	SFT-J7	+5V, GND
			HARNESS RING TERM (RED WIRE)	DW780+5V-D	+5V
	7015073-0-0	HARNESS-5V TERM	HARNESS RING TERM (RED WIRE)	DW780+5V-D	+5V RETURN
2	7014212-0H	CABLE AC DC LOW	CABLE P1	KA780-J14	
			CABLE P2	DW780-J14	
3	7014212-2M	CABLE AC DC LOW	CABLE P1	KA780-J16	
			CABLE P2	SFT-J8	
4	7014212-2M	CABLE AC DC LOW	CABLE P1	PS#2-J3	AC DC LOW GND
			P2	SFT-J9	
5	7014212-0M	CABLE AC DC LOW	CABLE P1	PS#3-J3	AC DC LOW & GND
			P2	KA780-J15	
7	7014212-1C	CABLE AC DC LOW	CABLE P1	PS#4-J3	AC DC LOW & GND
			P2	MS780-J20	
8	7014234-0K	CABLE ±5B ±12	CABLE P1	PS#4-J7	+5B ±12
			P2	MS780-J17	
			P3	MS780-J14	
9	7014249-1A	CABLE POWER (BLK)	PS#2+5 RET-D	DW780+5 RET-B	PS#2+5 RETURN
10	7014249-1A	CABLE POWER (BLK)	PS#2+5 RET-C	DW780+5 RET-C	
11	7014249-1C	CABLE POWER (BLK)	PS#2+5 RET-B	KA780+5B RET-B	
12	7014249-1C	CABLE POWER BLK	PS#2+5 RET-A	KA780+5B RET-C	PS#2+5 RETURN
13	7014530-1A	CABLE POWER (RED)	PS#2+5 -D	DW780+5 -B	PS#2+5
14			C	DW780+5 -C	
15	7014530-1A	CABLE POWER (RED)	PS#2+5 B	KA780+5B C	
16	7014530-1A	CABLE POWER (RED)	PS#2+5 A	KA780+5B B	PS#2+5
17	7014249-1T	CABLE POWER (BLK)	PS#3+5 RET-D	KA780+5C RET-D	PS#3+5 RETURN
18			C		C
19			B		B
20	7014249-1T	CABLE POWER (BLK)	PS#3+5 RET-A	KA780+5C-A	PS#3+5 RETURN
21	7014530-1E	CABLE POWER (RED)	PS#3+5 -D	KA780+5C-D	PS#3+5 RETURN
22			C		C
23			B		B
24	7014530-1E	CABLE POWER (RED)	PS#3+5 -A	KA780+5C-A	
29	7014250-0K	CABLE POWER	PS#4+5 RET-C	MS780-J15-A	PS#4+5 RETURN
30	7014250-0K	KTR MEMORY BLK	PS#4+5 RET-D	MS780-J15-B	
31	7014529-0K	CABLE POWER	PS#4+5 C	MS780-J18-A	PS#4+5V
32		+5 MEMORY (RED)	PS#4+5 D	MS780-J18-B	
33	7014248-3M	CABLE TO T.O.D. BTL	HARNESS P2	KA780-J20	
			P1	H7111-01	
34	7014243-21	FLOPPY RELAY	HARNESS P1	KA780-J19	
		SC PWR HARNESS	P2	SCP-J3	
			P3	RX01-J1	
35	7014249-0L	CABLE POWER (BLK)	KA780-A+5A RET-D	FRAME	
56	7014212-0M	CABLE AC/DC LD	CABLE P1	DW780-J13	SEE NOTE #3
			CABLE P2	KA780-J17	

11780-D

REF ITEM NUMBER	PART NUMBER	DESCRIPTION	FROM	TO	REMARKS
1	7015073-0-0	HARNESS-5V TERM.	HARNESS P3	RH780-J15	-5V GND
1	7015073-0-0	HARNESS-5V TERM.	HARNESS P4	RH780-A-J15	-5V GND
38	7014212-0M	CABLE AC DC LOW	CABLE P1	PS#5-J3	AC DC LD & GND
	7014212-0M	CABLE AC DC LOW	CABLE P2	RH780-J13	AC DC LD & GND
39	7014212-0H	CABLE AC DC LOW	CABLE P1	RH780-A-J14	AC DC LD & GND
	7014212-0H	CABLE AC DC LOW	CABLE P2	RH780-J13	AC DC LD & GND
40	7014249-0L	CABLE POWER (BLK)	PS#5+5 RET-D	RH780-A+5 RET-C	PS#5+5 RETURN
41			C	B	
42	7014249-0L	CABLE POWER (BLK)	PS#5+5 RET-B	RH780-A+5-C	PS#5+5 RETURN
43			A	B	
44	7014530-0L	CABLE POWER (RED)	PS#5+5 -D	RH780-A+5-C	PS#5+5V
45			C	B	
46	7014530-0L	CABLE POWER (RED)	PS#5+5 -B	RH780-A+5-C	PS#5+5V
47			A	B	

FP780

OR

FP780 & KU780

SEE NOTE 1

48	7014249-0L	POWER CABLE BLK	PS#1+5 A RET-D	KA780+5A RET-D	PS#1+5 RETURN
49			C	C	
50			B	B	
51	7014249-0L	POWER CABLE (BLK)	PS#1+5 A RET-A	KA780+5A RET-A	PS#1+5 RETURN
52	7014530-0L	POWER CABLE (RED)	PS#1+5 -D	KA780+5A -D	PS#1+5V
53			C	C	
54			B	B	
55	7014530-0L	POWER CABLE (RED)	PS#1+5 -A	KA780+5A -A	PS#1+5V
56	7014212-0M	CABLE AC DC LD	CABLE P1	PS#1-J3	AC, DC, LOW
			P2	KA780-J17	

OPTIONAL

SEE NOTE 3

KC780 OR KU780

SEE NOTE 2

57	7014530-0L	CABLE POWER (RED)	KA780-A+5A-D	KA780-A+5C-B	PS#2+5V
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NOTES:

1. REFER TO E-UA-KA780 FOR INSTRUCTIONS OF JUMPER REMOVAL IN CONFIGURATIONS USING PS#1.
2. IF THE FP780 IS INSTALLED REMOVE ITEM 57.
3. IF THE FP780 IS INSTALLED; ITEM #56 P1 CONNECTS TO PS#1-J3, OTHERWISE IT IS CONNECTED TO DW780-J13.

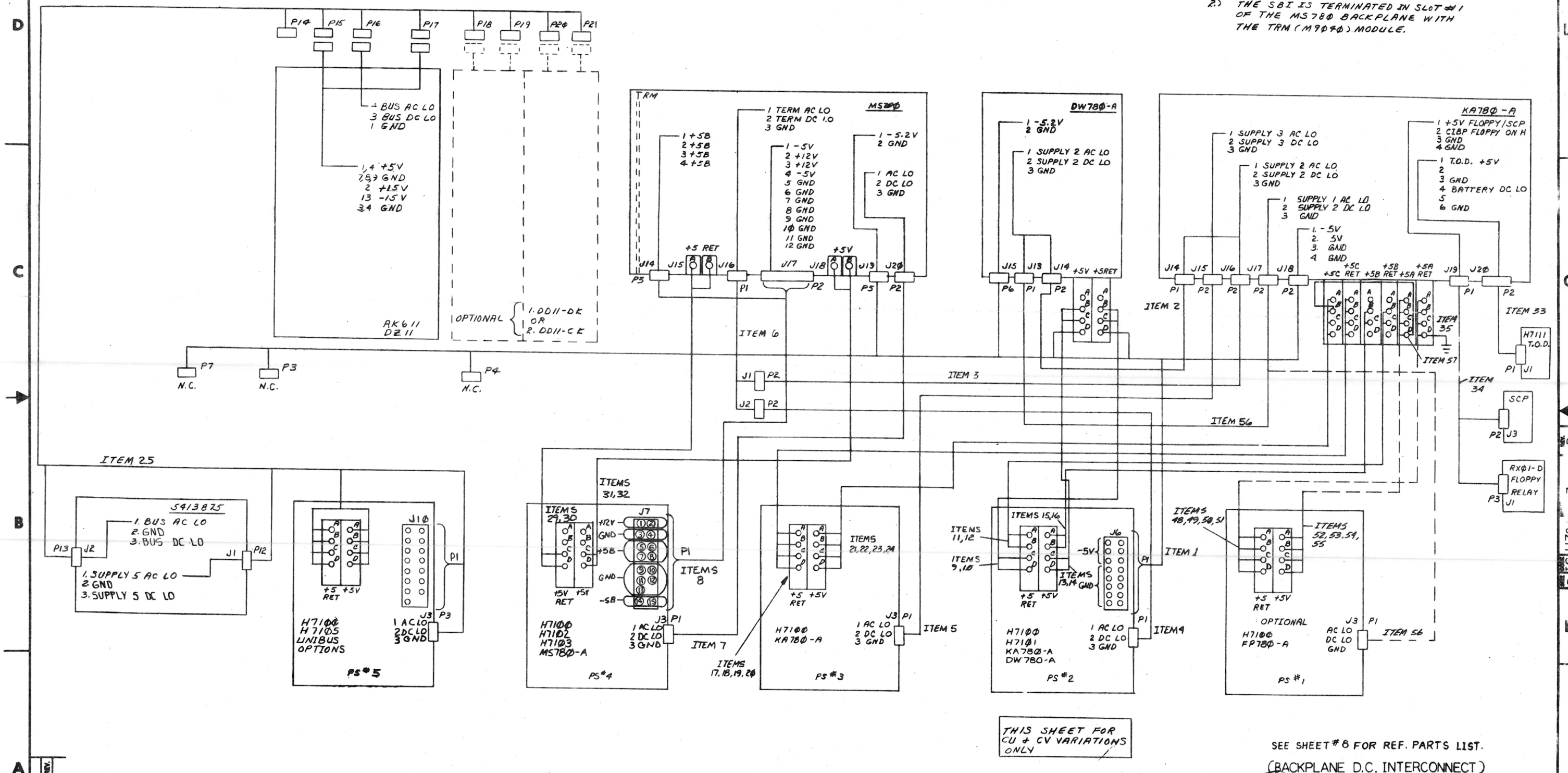
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE 11780 SUB-SYSTEM INTERCONNECT		SIZE CODE D1C	NUMBER 11780-0-3	REV. B
SCALE	SHEET 6 OF 8	DIST.		

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NOTES:

- ITEM # 5 ARE SHOWN FOR REFERENCE IN LOCATING CABLE DESTINATIONS ONLY USING SHEET B D-IC-11780-0-3
- THE SBI IS TERMINATED IN SLOT #1 OF THE MS780 BACKPLANE WITH THE TRM (M9040) MODULE.



THIS SHEET FOR CU + CV VARIATIONS ONLY

SEE SHEET # 8 FOR REF. PARTS LIST.
(BACKPLANE D.C. INTERCONNECT)

TITLE	SIZE CODE	NUMBER	REV.
11780 SUB SYSTEM INTERCONNECT	DIC	11780-0-3	B
SCALE	SHEET	OF	DIST.
++	7	8	

TW 1

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11780-CU/CV

REF ITEM NUMBER	PART NUMBER	DESCRIPTION	FROM	TO	REMARKS
1	7015073-0-0	HARNESS-5V TERMINATOR	HARNESS - P1	PS*2 - J6	-5V GND
			HARNESS - P2	KA780-J18	
			HARNESS - P5	MS780-J19	
			HARNESS - P6	DW780-J15	-5V GND
			HARNESS - P7	N.C.	±5V GND
			HARNESS RING TERM. (RED WIRE)	DW780+5V-D	+5V
	7015073-0-0	HARNESS-5V TERMINATOR	HARNESS RING TERM. (BLK WIRE)	DW780+5V-RT-D	+5V RETURN
2	7014212-0-H	CABLE AC DC LOW	CABLE - P1	KA780-J14	AC,DC LOW+GND
			CABLE - P2	DW780-J14	
3	7014212-2M	CABLE AC DC LOW	CABLE - P1	KA780-J16	AC,DC LOW+GND
			CABLE - P2	ITEM*6-J1	
4	7014212-2M	CABLE AC DC LOW	CABLE - P1	PS*2 - J3	AC,DC LOW+GND
			CABLE - P2	ITEM*6-J2	
5	7014212-0-M	CABLE AC DC LOW	CABLE - P1	PS*3 - J3	AC,DC LOW+GND
			CABLE - P2	KA780-J15	
6	70 - 0-J	AC DC LOW WYE CABLE	CABLE - P1	MS780-J16	AC,DC LOW+GND
			CABLE - J1	ITEM*3-P2	
			CABLE - J2	ITEM*4-P2	
7	7014212-1-C	CABLE AC DC LOW	CABLE - P1	PS*4 - J3	AC,DC LOW+GND
			CABLE - P2	MS780-J20	
8	7014212-0-K	CABLE ±5B + +12V	CABLE - P1	PS*4 - J7	±5B +12V+GND
			CABLE - P2	MS780-J17	
			CABLE - P3	MS780-J14	
9	7014249-1A	CABLE POWER (BLK)	PS*2 +5 RET -D	DW780+5 RET-B	PS*2+5 RETURN
10	7014249-1A	CABLE POWER (BLK)	PS*2 +5 RET -C	DW780+5 RET-C	
11	7014249-1C	CABLE POWER (BLK)	PS*2 +5 RET -B	KA780+5B RET-B	
12	7014249-1C	CABLE POWER (BLK)	PS*2 +5 RET -A	KA780+5B RET-C	PS*2 +5 RETURN
13	7014530-1A	CABLE POWER (RED)	PS*2 +5V -D	DW780+5V-B	PS*2 +5V
14	7014530-1A	CABLE POWER (RED)	PS*2 +5V -C	DW780+5V-C	
15	7014530-1A	CABLE POWER (RED)	PS*2 +5V -B	KA780+5B-C	
16	7014530-1A	CABLE POWER (RED)	PS*2 +5V -A	KA780+5B-B	PS*2 +5V
17	7014249-1J	CABLE POWER (BLK)	PS*3 +5V RET -D	KA780+5C RET-D	
18			-C	-C	
19			-B	-B	
20	7014249-1J	CABLE POWER (BLK)	PS*3 +5V RET -A	KA780+5C RET-A	PS*3 +5 RETURN
21	7014530-1E	CABLE POWER (RED)	PS*3 +5V -D	KA780+5C -D	PS*3 +5 RETURN
22			-C	-C	
23			-B	-B	
24	7014530-1E	CABLE POWER (RED)	PS*3 +5V -A	KA780+5C -A	
25	7016951-0-0	UNIBUS PWR HARNESS	HARNESS - P1	PS*5 - J10	PS*5+15V,-15V+GND
			HARNESS RING TERM (BLK WIRE) -P2	PS*5+5 RET -D	PS*5 +5 RETURN
			HARNESS - P3	PS*5 -J3	AC,DC LOW+GND
			HARNESS RING TERM (RED WIRE) -P4	PS*5 +5V -D	PS*5 +5V
			-P5	-C	
			-P6	-B	
			HARNESS RING TERM (RED WIRE) -P7	PS*5 +5V -A	
			HARNESS RING TERM (BLK WIRE) -P8	PS*5 +5 RET-D	PS*5 +5 RETURN
			-P9	-C	
			-P10	-B	
			HARNESS RING TERM (BLK WIRE) -P11	PS*5 +5 RET-A	
	7016951-0-0	UNIBUS PWR HARNESS	HARNESS - P12	ADAPTER BOARD-J1	AC,DC LOW + GND

11780-CU/CV

REF ITEM NUMBER	PART NUMBER	DESCRIPTION	FROM	TO	REMARKS
25	7016951-0-0	UNIBUS PWR HARNESS	HARNESS - P13	ADAPTER BOARD-J2	ADAPT. AC,DC LOW+GND
			-P14	N.C.(OPTIONAL)	
			-P15	RK611 - P2	
			-P16	RK611 - P3	
			-P17	RK611 - P4	
			-P18	NC.(OPTIONAL)	
			-P19		
			-P20		
	7016951-0-0	UNIBUS PWR HARNESS	HARNESS - P21	NC.(OPTIONAL)	
29	7014250-0-K	CABLE POWER	PS*4 +5V RET -C	MS780-J15-A	PS*4 +5 RETURN
30		RTR MEMORY (BLK)	-D	-B	
31	7014529-0-K	CABLE POWER	PS*4 +5V -C	MS780-J18-A	PS*4 +5V
32		+5 MEMORY (RED)	-D	-B	
33	7014243-3M	CABLE TO T.Q.D. BAT.	HARNESS - P2	KA780-J20	
			-P1	H7111 - J1	
34	7014243-21	FLOPPY RELAY	HARNESS - P1	KA780-J19	
		SC PWR HARNESS	-P2	SCP - J3	
			-P3	RX01 - J1	
35	7014249-0-L	CABLE POWER (BLK)	KA780+5A RET-D	FRAME	
56	7014212-0-M	CABLE AC/DC LO	CABLE - P1	DW780 - J13	SEE NOTE *3
			CABLE - P2	KA780-J17	

FP780

OR

FP780 + KU780

SEE NOTE

48	7014249-0-L	POWER CABLE (BLK)	PS*1 +5A RET -D	KA780+5A RET-D	PS*1 +5 RETURN
49			-C	-C	
50			-B	-B	
51	7014249-0-L	POWER CABLE (BLK)	PS*1 +5A RET -A	KA780+5A RET-A	
52	7014530-0-L	POWER CABLE (RED)	PS*1 +5V -D	KA780+5A -D	PS*1 +5A
53			-C	-C	
54			-B	-B	
55	7014530-0-L	POWER CABLE (RED)	PS*1 +5V -A	KA780+5A -A	
56	7014212-0-M	CABLE AC DC LO	CABLE - P1	PS*1 - J3	AC,DC LOW+GND
			CABLE - P2	KA780-J17	

OPTIONAL
SEE NOTE 3

KC780 OR KU780

SEE NOTE 2

57	7014530-0-L	CABLE POWER (RED)	KA780 +5A -D	KA780+5C -B	PS*2 +5V
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NOTES:

1. REFER TO E-UA-KA780 FOR INSTRUCTIONS OF JUMPER REMOVAL IN CONFIGURATIONS USING PS*1
2. IF THE FP780 IS INSTALLED, REMOVE ITEM 57.
3. IF THE FP780 IS INSTALLED: ITEM *56 P1 CONNECTS TO PS*1-J3 OTHERWISE IT IS CONNECTED TO DW780-J13.

THIS SHEET FOR
CU+CV VARIATION
ONLY

REVISION HISTORY		
DATE	ECO NUMBER	REV.

DRD 137A

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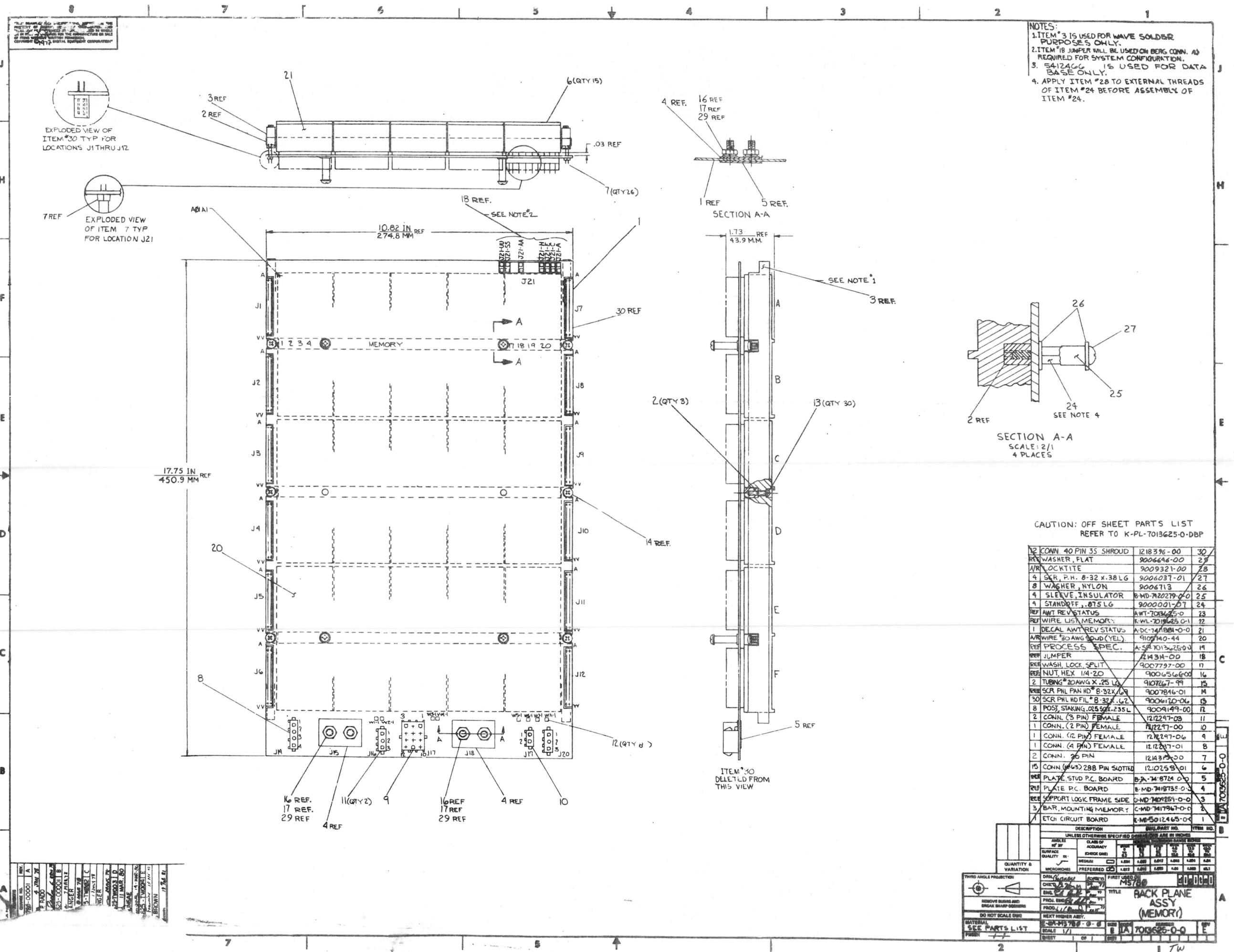
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TITLE 11780 SUB-SYSTEM
INTERCONNECT

DOCUMENT NUMBER		
SIZE CODE	NUMBER	REV.
DIC	11780-0-3	B
SCALE	SHEET 8	OF 8



COMPONENT SIDE VIEW

SIGNATURES		DATE	
CHM. - <i>W. J. G. [Signature]</i>	2-1-77		
CHM. D. <i>[Signature]</i>	2-1-77		
ENG. <i>[Signature]</i>	2-1-77		
PROJ. ENG. <i>[Signature]</i>	2-1-77		
PROC. <i>[Signature]</i>	2-1-77		
DESIGN. <i>[Signature]</i>	2-1-77		
DATE	2-1-77		
OF 5			
SHT.			
UNIT NUMBER 855-0-10100-0-01C		DRAWING NO. 502465-0-01C	
TITLE		ETCH DRAWING	
digital		ORILL AND	
digital		ORILL AND	

BOARD FABRICATION INFORMATION	
PANEL SIZE	NON-STD 16.00 x 20.00
PANEL DATA DTG.	
PANEL MAT'L	0.02 THK
QTY. OF LAYERS	4
COPPER THICKNESS	1/2 oz. - 30.2 %
PTH.	PRINT AND ETCH
MOULDED INSERTS	1/8" DEEP ON HOLE

[illegible]

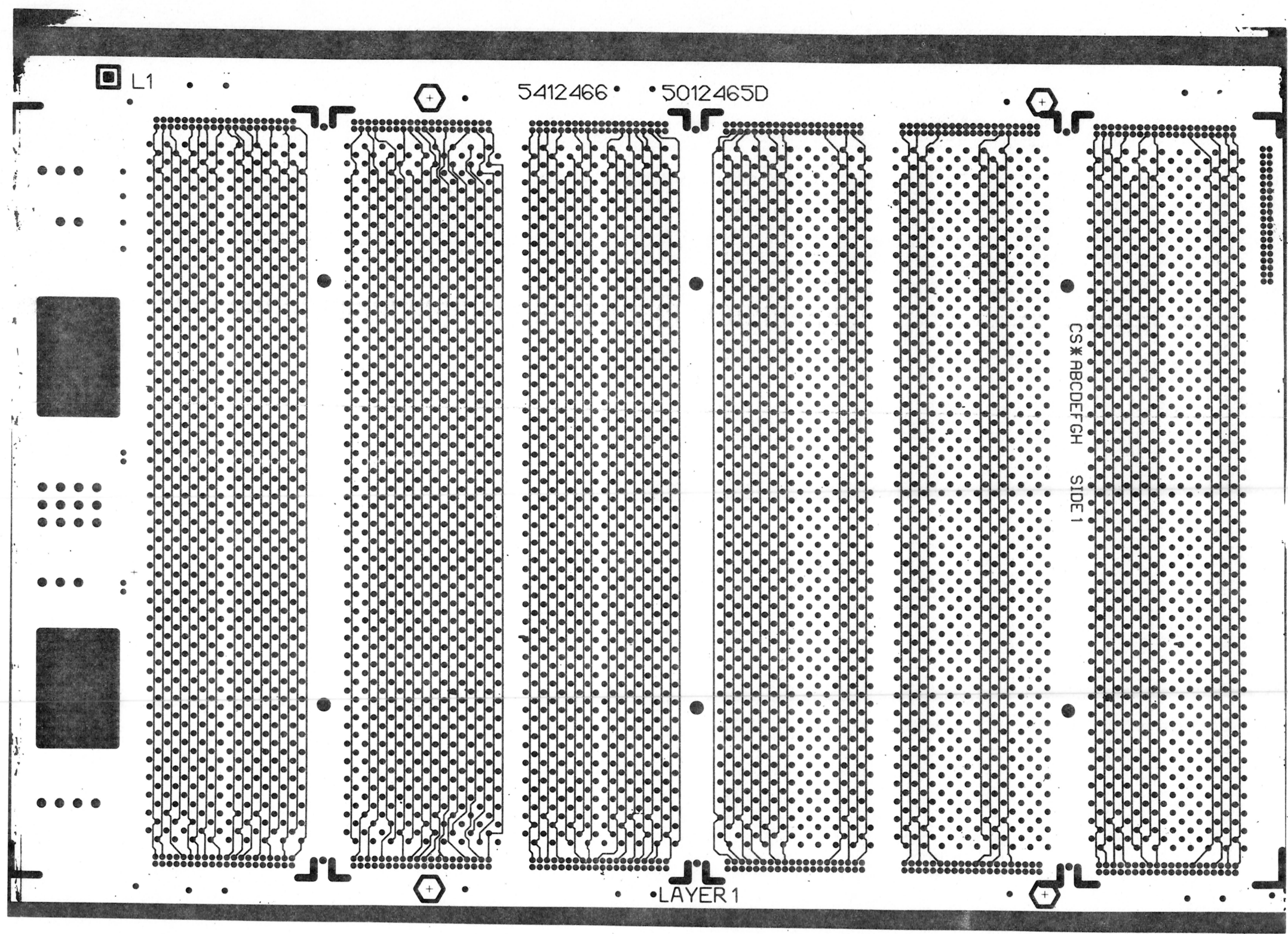
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1977

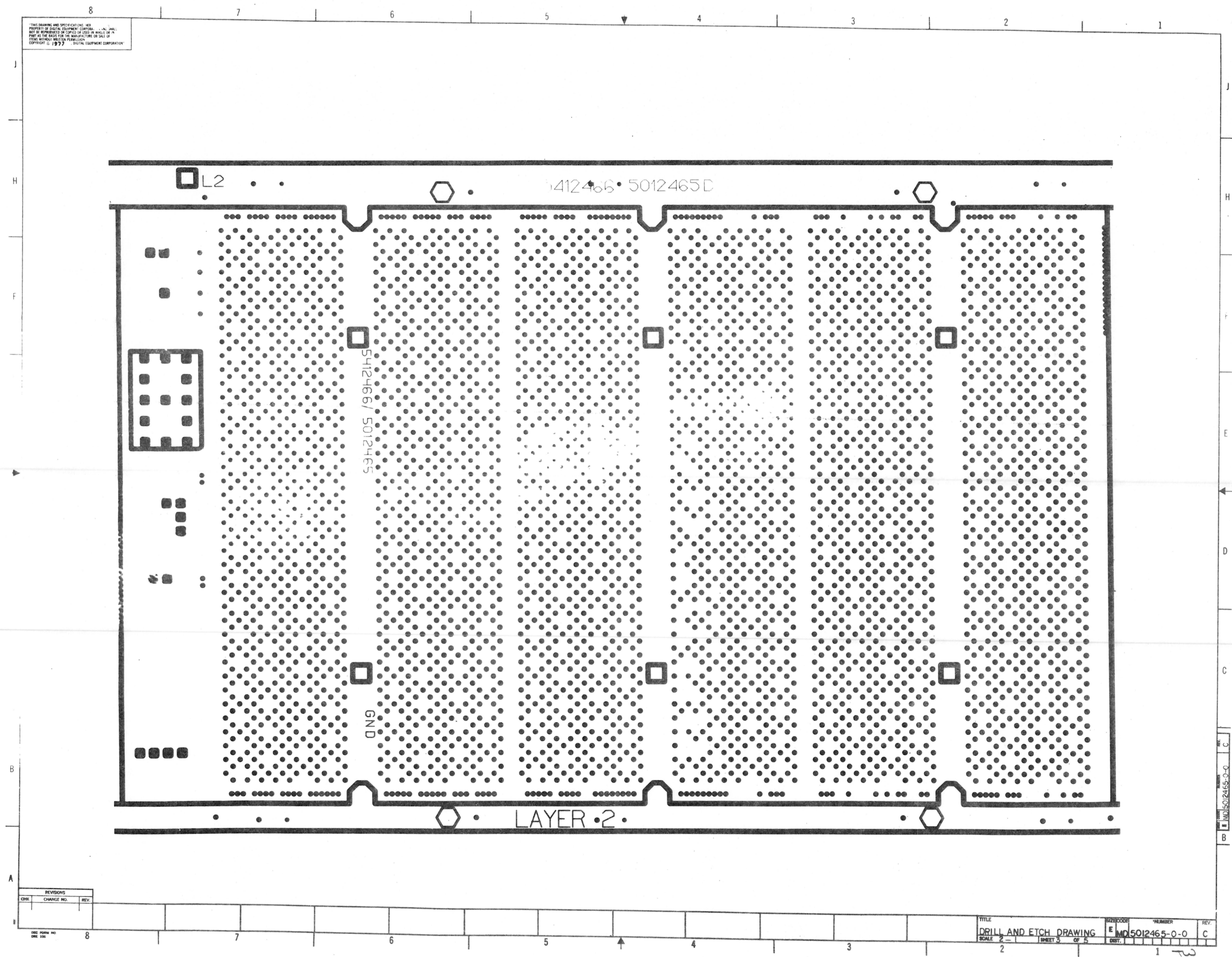
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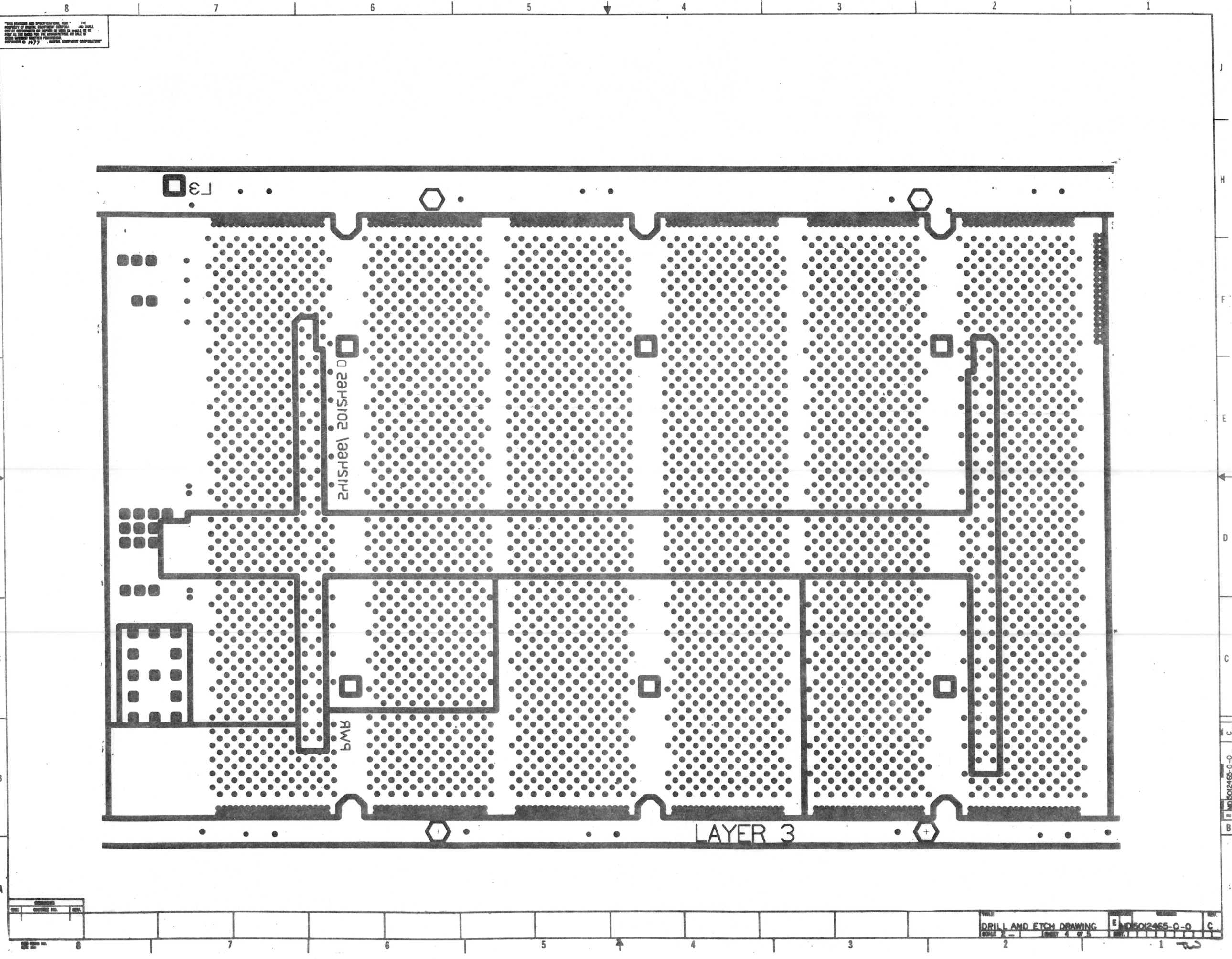
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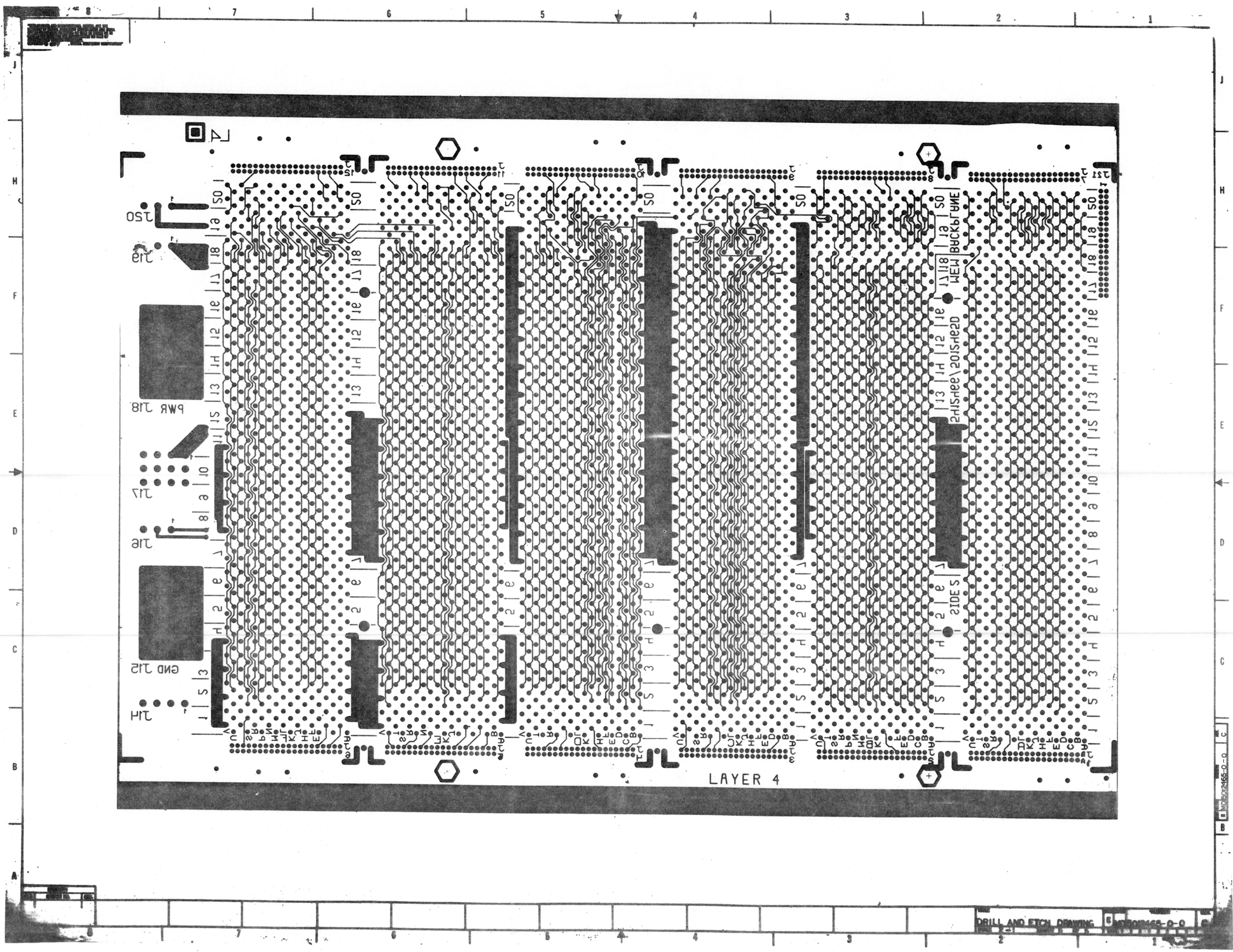
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SCALE	2	SHEET	3	OF	5	DIST.	1



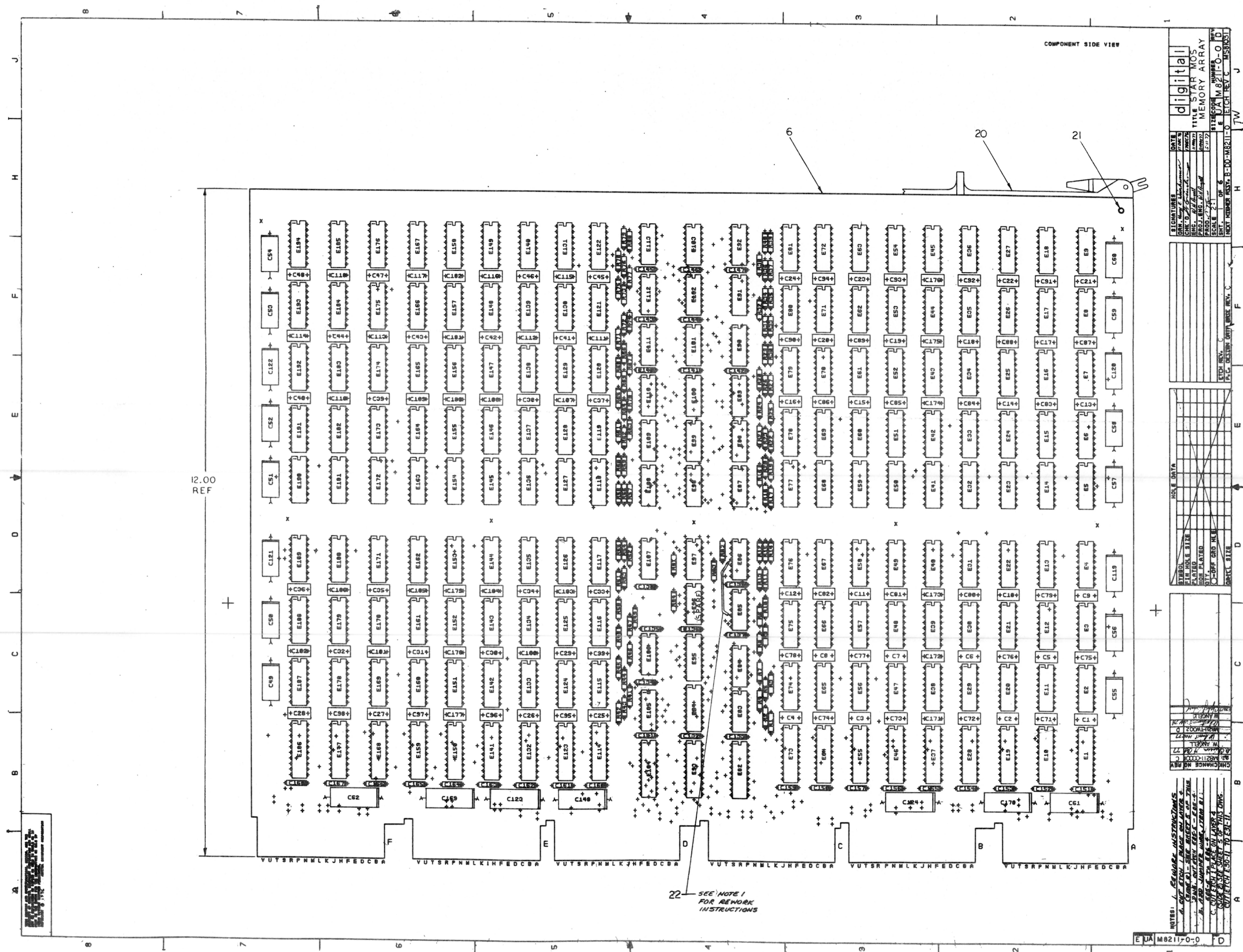
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DRILL AND ETCH DRAWING
SCALE 1:1
REV. 1
DATE 10/17/77
EML5012465-0-0
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LAYER 4



NOTES: 1. REWORK INSTRUCTIONS
A. CUT EACH PLACE ON LAYER 4
(PAGE 8) - SEE SHEET 5 OF THIS
DRAWING. CUT EACH LAYER 4
B. ALSO, JUMPER WIRE, LAYER 81 -
CUT 4 TO 80 - 4
C. CUT EACH PLACE ON LAYER 4
(PAGE 2) SEE SHEET 5 OF THIS DRAWING.
D. CUT EACH LAYER 4 TO 80 - 4

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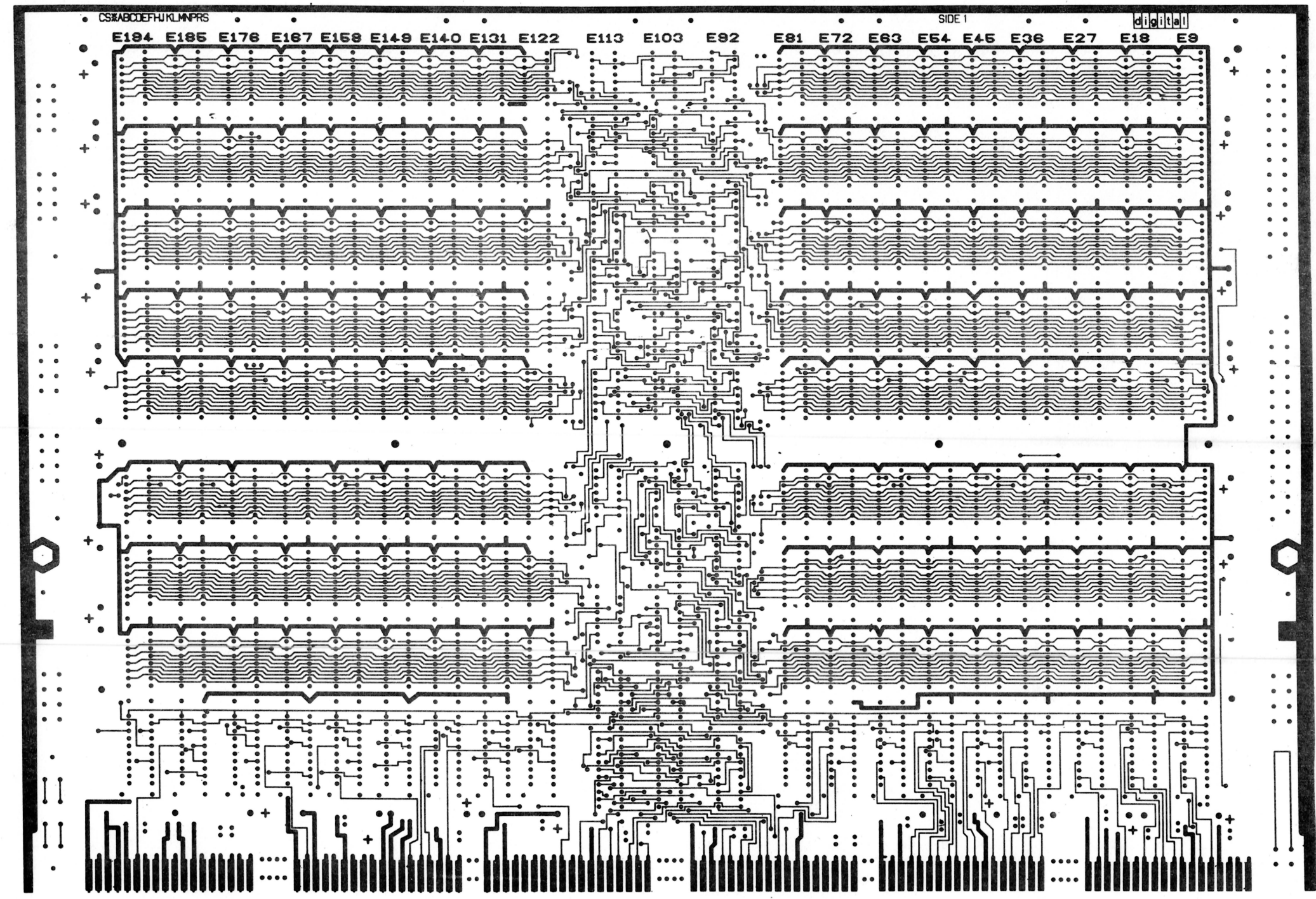
HOLE DATA	
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SIGNATURES		DATE	<div style="display: flex; justify-content: space-between;"> <div> <div style="border: 1px solid black; padding: 2px;">digital</div> <div>TITLE STAR MOS</div> <div>MEMORY ARRAY</div> </div> <div> <div>SIZE CODE</div> <div>NUMBER</div> <div>REV</div> </div> </div>
DR. Wally E. Zimmerman		1/10/67	
CAR. D. G. G. G.		2/20/67	
ENG. W. H. H. H.		4/20/67	
PROJ. ENG. W. H. H. H.		4/20/67	
PROD. 1/1/67		5/11/67	
SCALE 2:1			
SHT. 1 OF 6			<div style="display: flex; justify-content: space-between;"> <div> <div>U A M 821</div> <div>0</div> </div> <div> <div>REV</div> <div>1</div> </div> </div>

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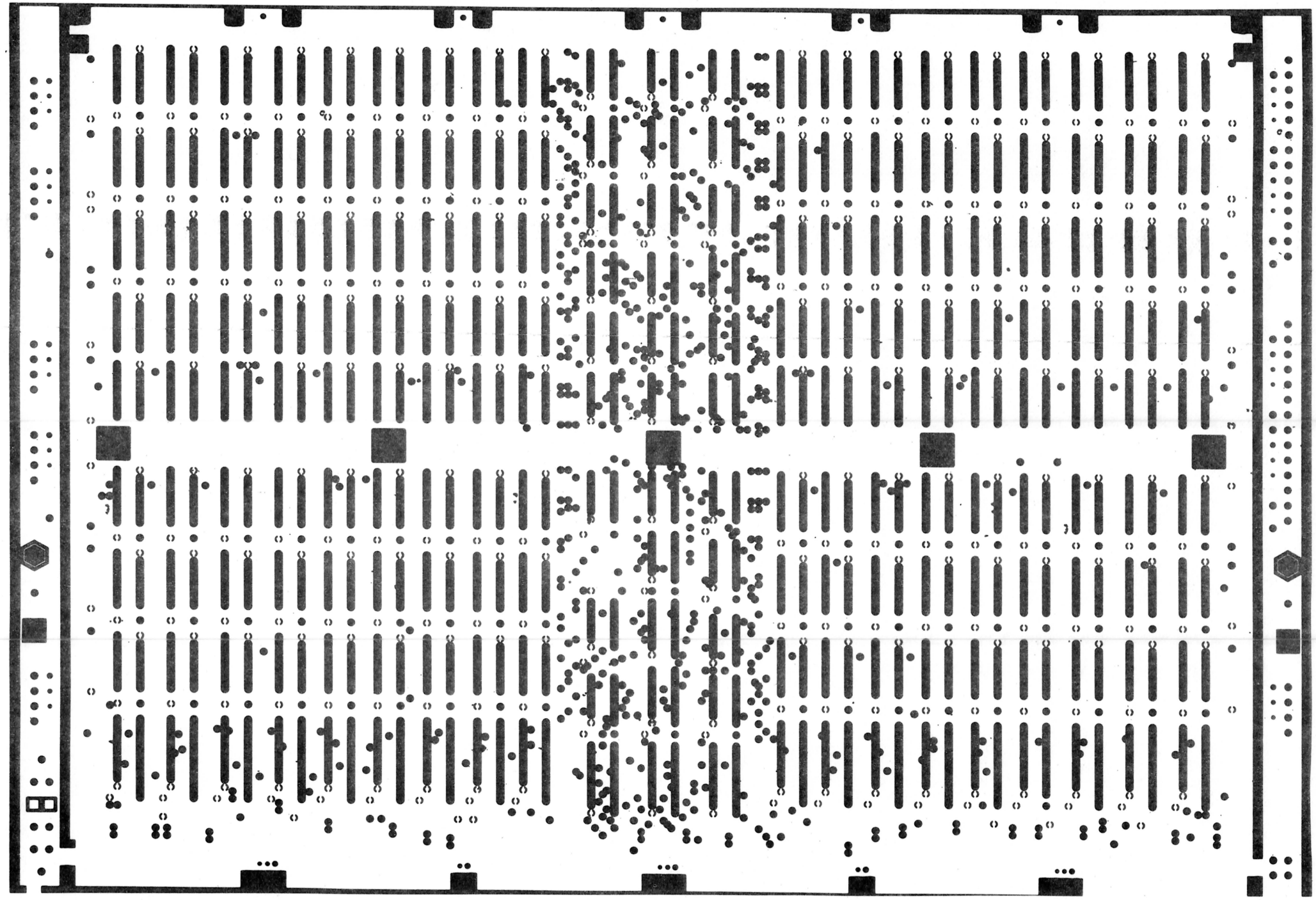
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MEMORY ARRAY		E 1A	M8211-0-0		D
SCALE		2/1	SHEET 2 OF 6		
DATE			BY		

M8211-0-0
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B

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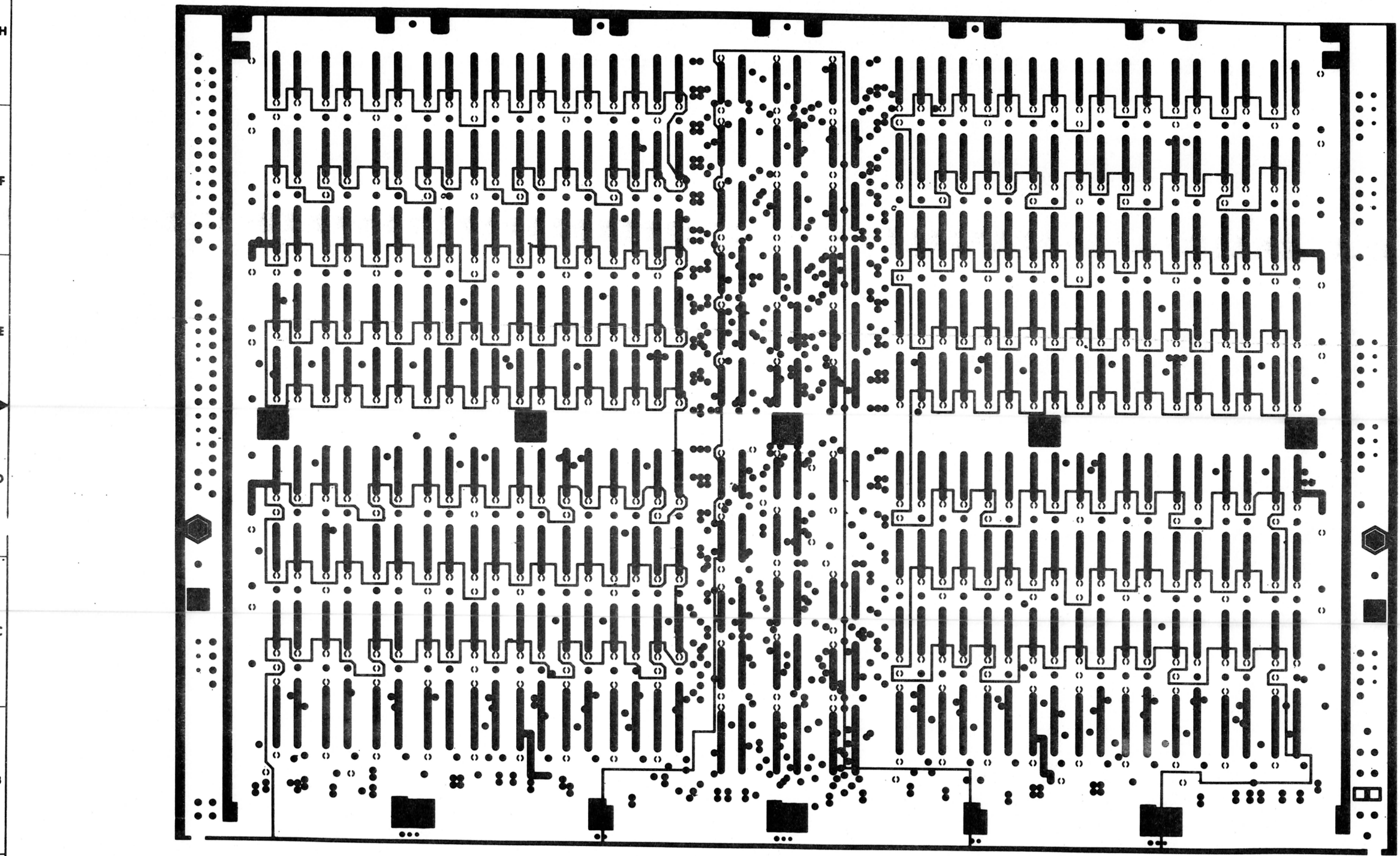


REVISIONS		
CHK	CHANGE NO.	REV.

TITLE		STAR MOS	NUMBER		MB211-0-0	REV.	D
SCALE		8/1	SHEET		3 OF 6	DIST.	

MB211-0-0

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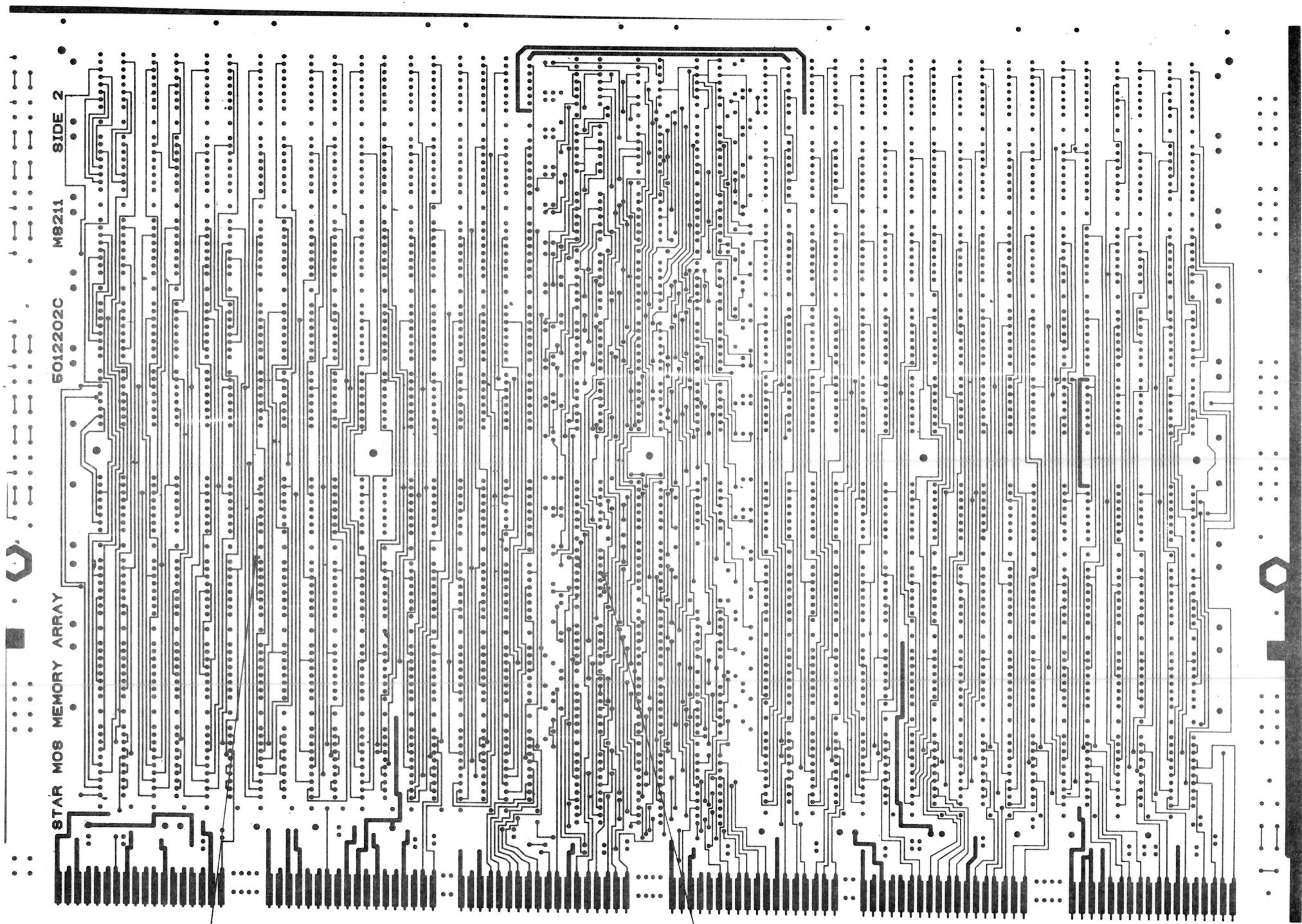


REVISIONS		
DATE	CHANGE NO.	BY

TITLE	STAR MOS	SIZE CODE	NUMBER	REV
MEMORY ARRAY	EUA	M8211-0-0		D
SCALE	2/1	SHEET	4 OF 6	
		DIST.	1	
		TW		

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CUT ETCH ONE PLACE, APPROXIMATELY AS SHOWN

CUT ETCH ONE PLACE, APPROXIMATELY AS SHOWN

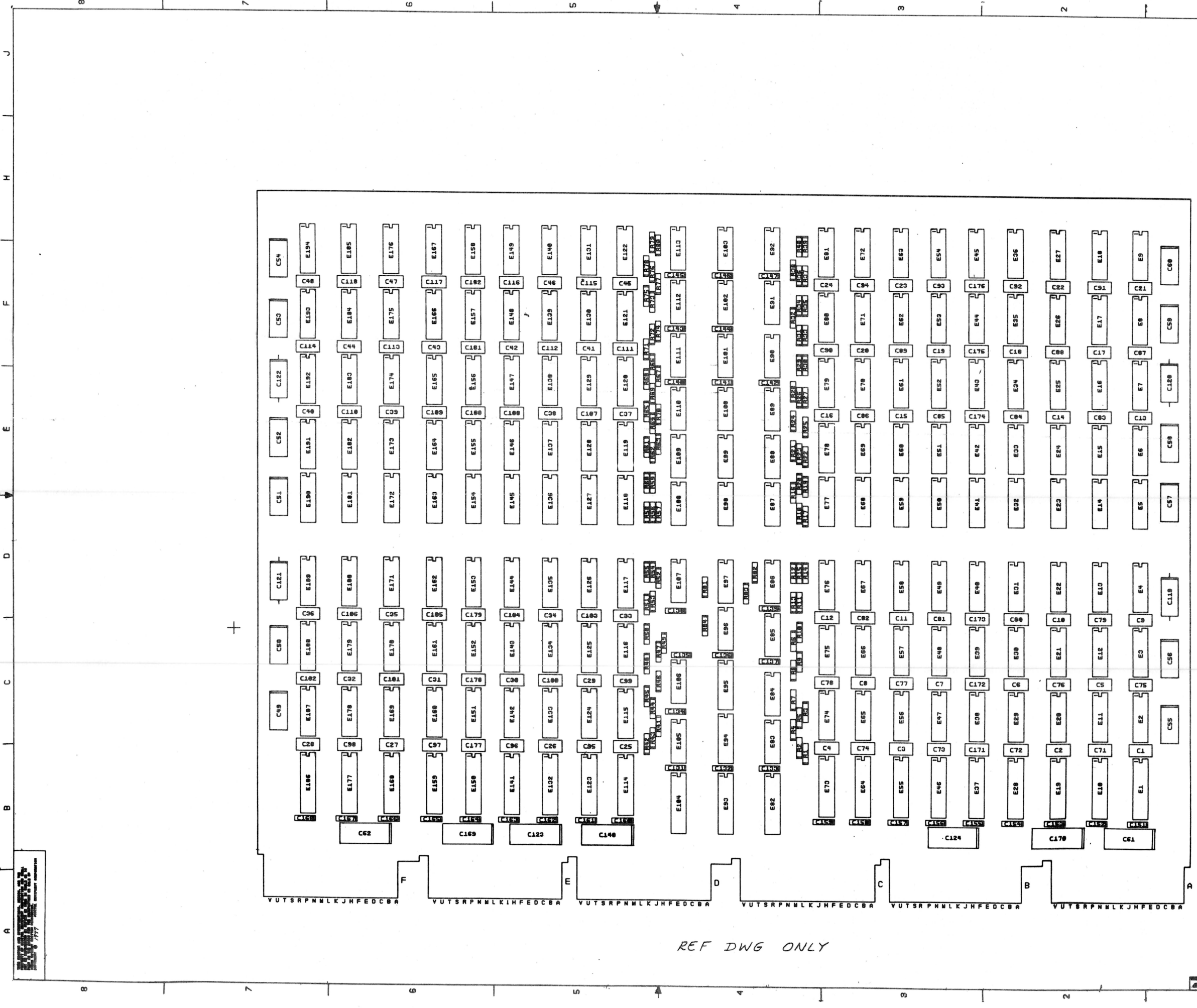
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CHK	CHANGE NO.	REV.

DEC FORM NO. 100 101

TITLE		SIZE/DATE	NUMBER	REV
STAR MOS MEMORY ARRAY		E/UA	M8211-0-0	D
SCALE	2/1	SHEET	5 OF 6	DIST.

TW

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REF DWG ONLY

REFERENCE
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SIGNATURES	DATE	digital
CHK'D	10/10/77	
ENG'D	10/10/77	
PROD. ENG.	10/10/77	
PROD.	10/10/77	
SCALE	1/12	
SHT. 6 OF 6		
TITLE	STAR MOS	
MEMORY ARRAY		
NUMBER	10000	
REV	0	
DATE	10/10/77	

NOTES: 1. FOR REMOVAL INSTRUCTIONS
SEE DRAWING OF THIS UNIT
DRAWING

10000-0-0

LINE	ITEM	DOCUMENT NUMBER	PART NUMBER	DESCRIPTION	QTY PER VARIATION		REFERENCE DESIGNATOR
					AB	AC	
1	1	D-CS-M8211-0-1		CIRCUIT SCHEMATIC	REF	REF	
2	2	F-UA-M8211-0-0		UNIT ASSEMBLY	REF	REF	
3	3	H-DD-M8211-0-0		DWG.DIRECTORY	REF	REF	
4	4	E-MD-5012202-0-0		DRILL &ETCH DRAWING	REF	REF	
5	5	A-SP-M8211-0-0		SPECIFICATION,MODULE	REF	REF	
6	6		5012202-00	ETCH BRD M8211	1	1	
7	7		1012784-00	.047 MFD 50V -20+80 CER	35	35	C131-C147,C151-C168
8	8		1001796-00	50 MFD 25V G% 30D AL EL	7	7	C61,C62,C123,C124,C148,C169,C170
9	9		1012084-01	8 MFD 25V G% 30D AL EL	16	16	C49-C60,C119-C122
10	10		1010274-00	.22 MFD 50V -20+80 Z5U CER	108	108	C1-C48,C71-C118,C171-C182
11	11		1300202-00	47 1/4W 5% CC	80	80	R1-R80
12	12		1300365-00	1 K 1/4W 5% CC	4	4	R81-R84
13	13		1910549-00	74S158 MUX 1 OF 2 (QUAD)	2	2	E94,E95
14	14		1912829-00	LS86 X-OR GATE-QUAD 2IN	1	1	E97
15	15		1910541-00	74S40 NAND GATE-DUAL 4IN,B	4	4	E83,E85,E86,E99
16	16		1910532-00	74S00 NAND GATE-QUAD 2INS	21	21	E84,E87-E92,E98,E100-E103, CONT E105-E113
17	17		1913462-00	74S240 OCTAL BUFFER,INVERTI	3	3	E82,E93,E104
18	18		1913777-00	LS240 DRIVER,LINE,OCTAL,T	18	18	E1,E10,E19,E28,E37,E46,E55,E64, CONT E73,E114,E123,E132,E141,E150, CONT E159,E168,E177,E186
19	19		2113735-01	4K MOS RAM 200NS 1	144	0	E2-E9,E11-E18,E20-E27,E29-E36, CONT E38-E45,E47-E54,E56-E63,E65-E72, CONT E74-E81,E124-E131,E133-E140, CONT E142-E149,E151-E158,E160-E167, CONT E169-E176,E178-E185,E187-E194, CONT E115-E122
20	20		1210711-02	HANDLE,MODULE,HEX	1	1	
21	21		9000024-01	EYELET, ROLLED FLANGE, .121 OD X	12	12	

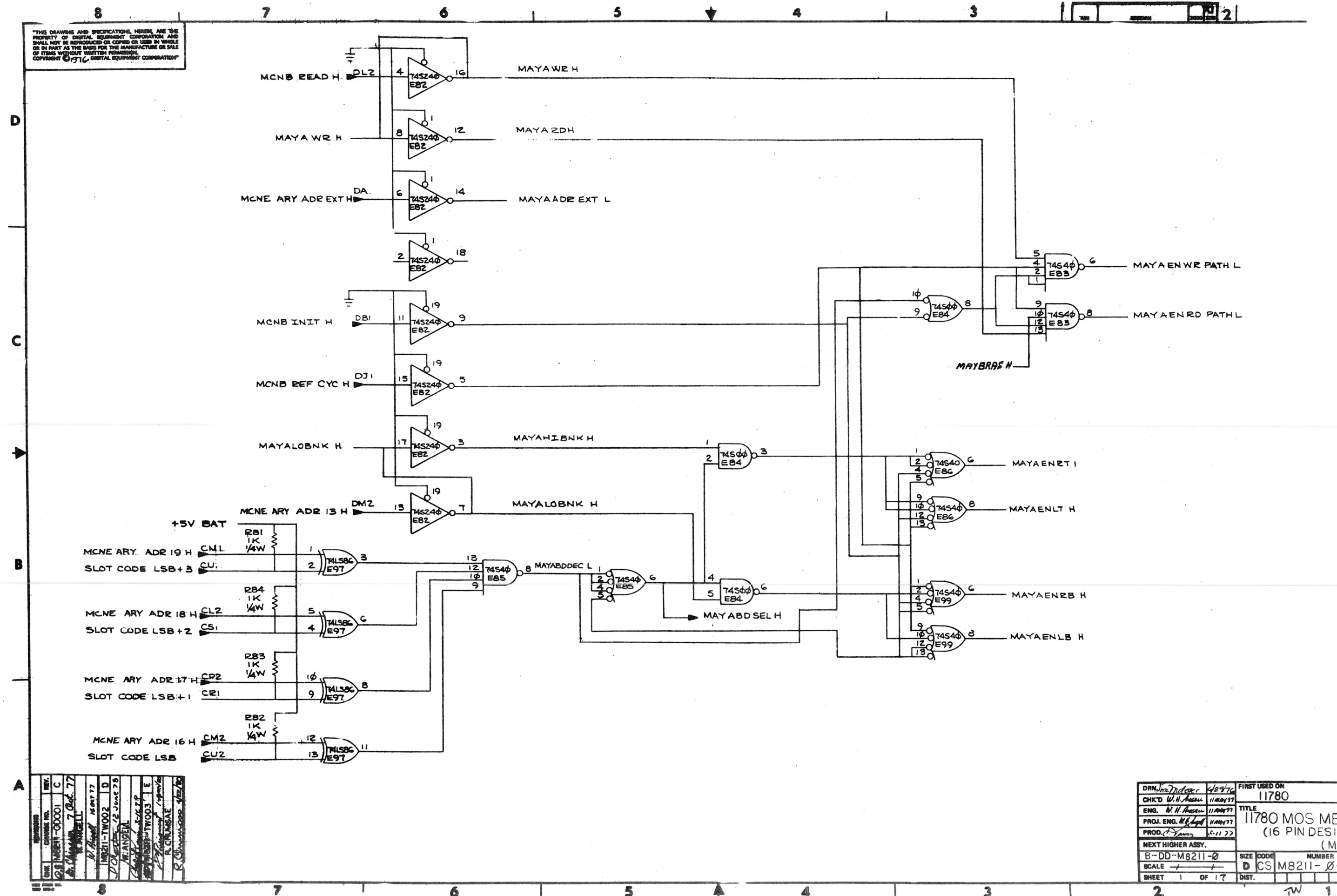
REVISION HISTORY		BASIC PART NO: M8211		DRN: H.WEINBRENNER		DATE: 06-JUN-78		D I G I T A L	
ENG	ECO NUMBER	REV	SECTION A OF A	CHK'D: P.BOSSMAN		DATE: 06-JUN-78		TITLE PARTS LIST	
---	INITIAL	D	SECTION VARIATION INDEX	DES.ENG: W.H.ANGELL		DATE: 06-JUN-78		STAR MOS MEMORY ARRAY	
			[A] AB,AC	RESP.ENG.: W.H.ANGELL		DATE: 06-JUN-78		DOCUMENT NUMBER	
			[B]	MFG.ENG.: C.TANNER		DATE: 06-JUN-78		SIZE CODE NUMBER REV	
			[C]	ASSEMBLY NUMBER:		TOP DOCUMENT NUMBER:		FILE NAME: EDIT #	
			[D]	D-UA-M8211-0-0				M8211.PLS 5	
			[E]						
			[F]						
			[G]						
			[H]						
			[I]						
			[J]						
			[K]						
			[L]						
			[M]						
			[N]						
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COPYRIGHT (C) 1979. DIGITAL EQUIPMENT CORPORATION									

LINE	ITEM	DOCUMENT NUMBER	PART NUMBER	DESCRIPTION	QTY PER VARIATION		REFERENCE DESIGNATOR
					AB	AC	
22	22		9105740-55	WIRE(WRAP)30AWG		UL1423	A/R A/R
23	23		2113914-01	4K MOS RAM 200NS 1		0 144	
							E2-E9,E11-E18,E20-E27,E29-E36,
					CONT		E38-E45,E47-E54,E56-E63,E65-E72,
					CONT		E74-E81,E115-E122,E124-E131,
					CONT		E133-E140,E142-E149,E151-E158,
					CONT		E160-E167,E169-E176,E178-E185,
					CONT		E187-E194

0 NOTE: MODULES WITH UNMARKED HANDLE VARIATION ARE M8211-AR.
1 NOTE: SPARE T.C. (14 PIN) E96

D	I	G	I	T	A	L	TITLE	STAR MOS MEMORY ARRAY	SECTION A	OF A	SIZE	CODE	DOCUMENT NUMBER	REV
											K	PL	M8211-0-DBP	D

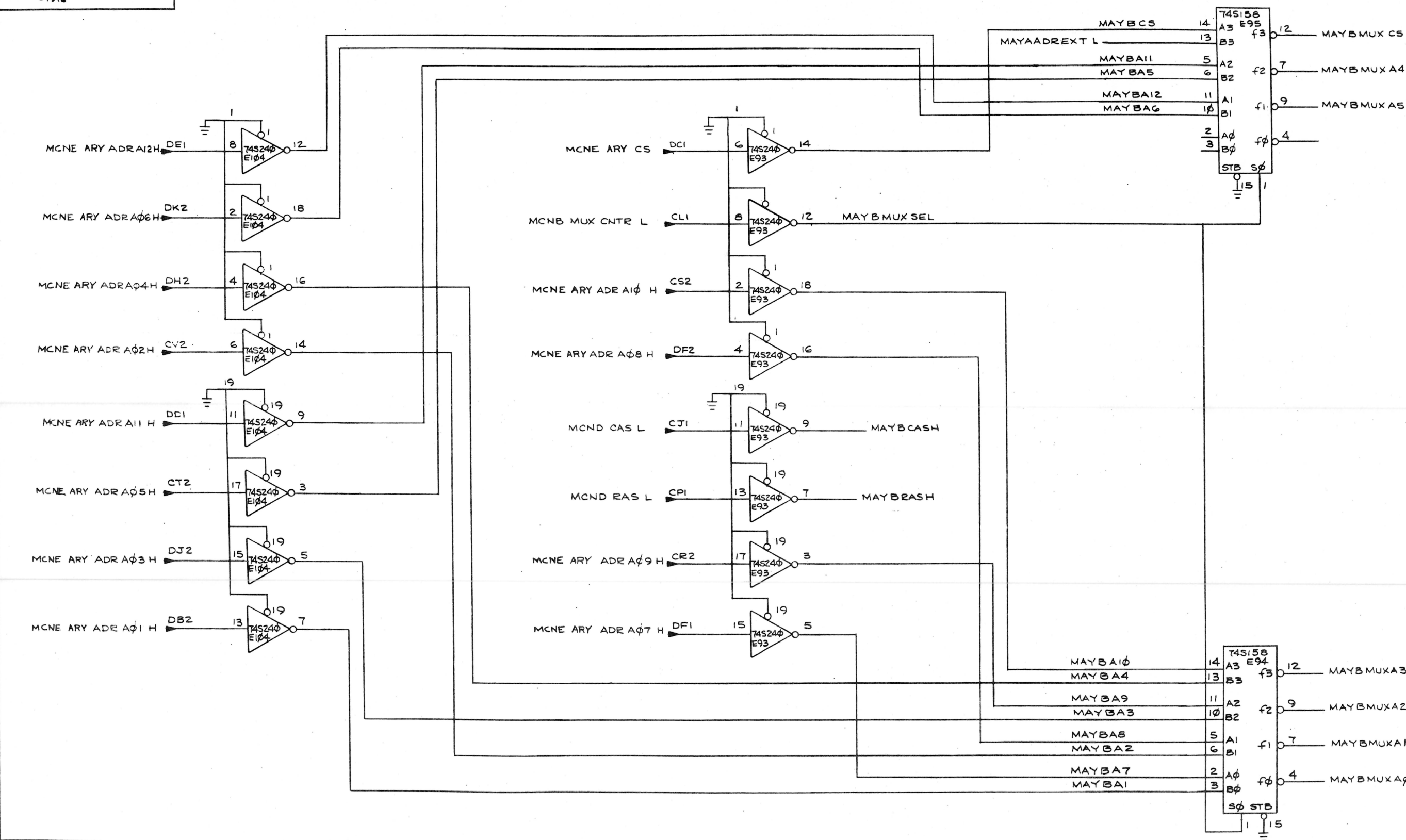
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REV.	DATE	BY	CHK'D	APP'D
1	11/11/77	W. H. Hansen	W. H. Hansen	W. H. Hansen
2	11/11/77	W. H. Hansen	W. H. Hansen	W. H. Hansen
3	11/11/77	W. H. Hansen	W. H. Hansen	W. H. Hansen
4	11/11/77	W. H. Hansen	W. H. Hansen	W. H. Hansen
5	11/11/77	W. H. Hansen	W. H. Hansen	W. H. Hansen
6	11/11/77	W. H. Hansen	W. H. Hansen	W. H. Hansen
7	11/11/77	W. H. Hansen	W. H. Hansen	W. H. Hansen
8	11/11/77	W. H. Hansen	W. H. Hansen	W. H. Hansen
9	11/11/77	W. H. Hansen	W. H. Hansen	W. H. Hansen
10	11/11/77	W. H. Hansen	W. H. Hansen	W. H. Hansen
11	11/11/77	W. H. Hansen	W. H. Hansen	W. H. Hansen
12	11/11/77	W. H. Hansen	W. H. Hansen	W. H. Hansen
13	11/11/77	W. H. Hansen	W. H. Hansen	W. H. Hansen
14	11/11/77	W. H. Hansen	W. H. Hansen	W. H. Hansen
15	11/11/77	W. H. Hansen	W. H. Hansen	W. H. Hansen
16	11/11/77	W. H. Hansen	W. H. Hansen	W. H. Hansen
17	11/11/77	W. H. Hansen	W. H. Hansen	W. H. Hansen
18	11/11/77	W. H. Hansen	W. H. Hansen	W. H. Hansen
19	11/11/77	W. H. Hansen	W. H. Hansen	W. H. Hansen
20	11/11/77	W. H. Hansen	W. H. Hansen	W. H. Hansen

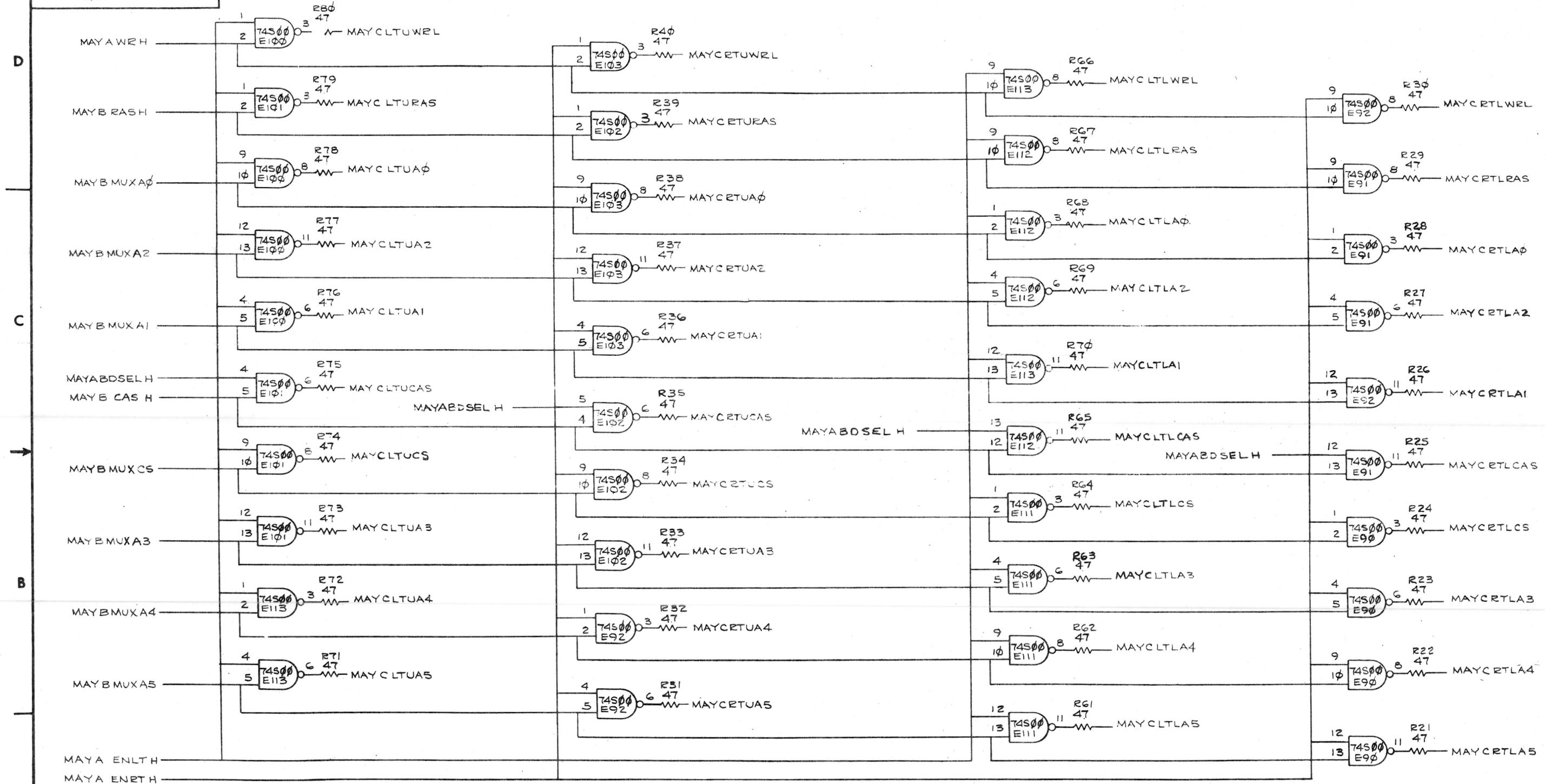
DRN: 11780	CHK'D: W. H. Hansen	11/11/77	FIRST USED ON: 11780	TITLE: 11780 MOS MEMORY (16 PIN DESIGN) (MAY A)
ENG: W. H. Hansen	11/11/77	PROJ. ENG: W. H. Hansen	11/11/77	PROD. W. H. Hansen
NEXT HIGHER ASSY: B-DD-M8211-0				
SCALE: 1 OF 17	SIZE: D	CODE: CS	NUMBER: M8211-0-1	REV: E

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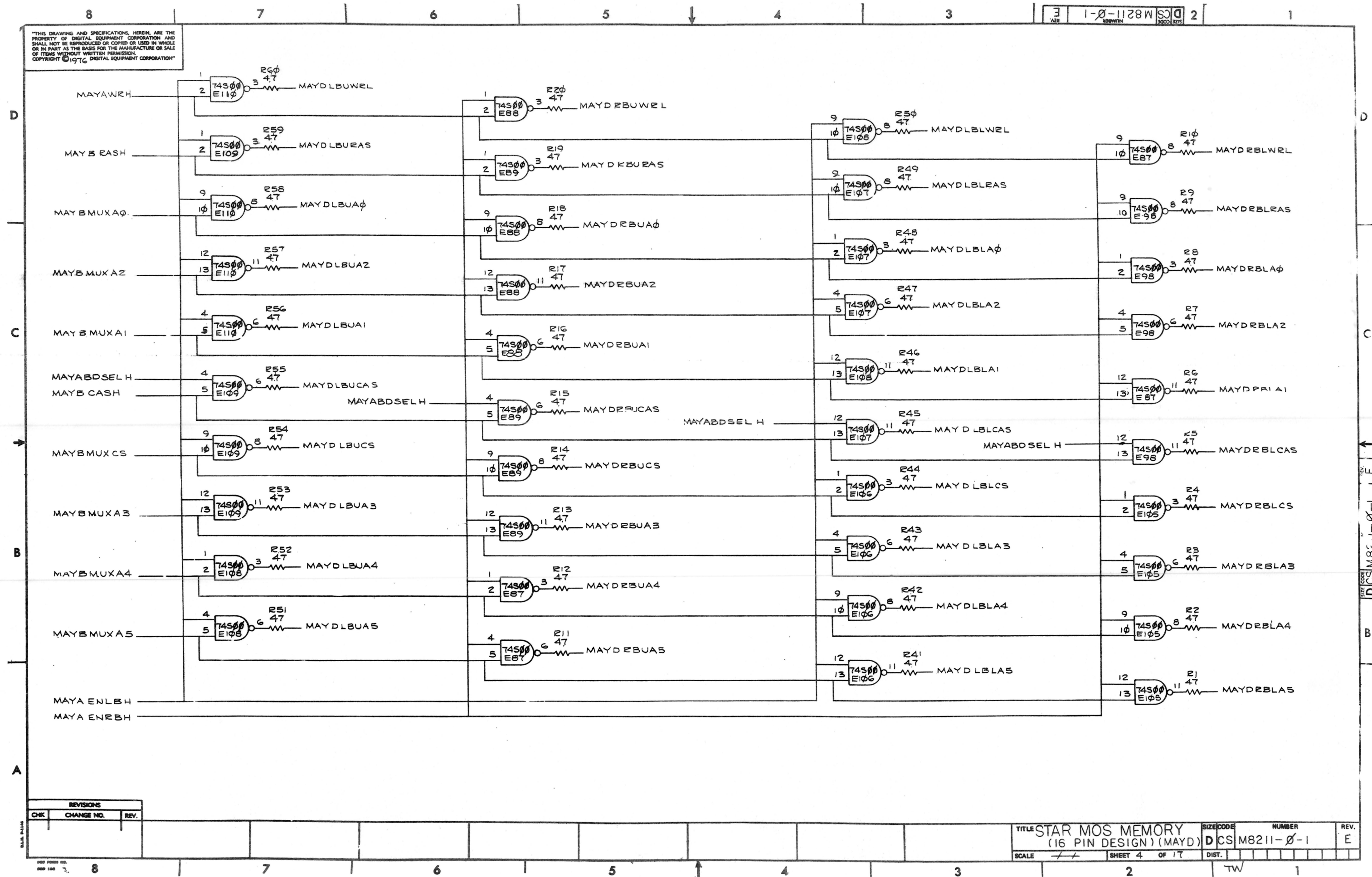


REVISIONS		
CHK	CHANGE NO.	REV.

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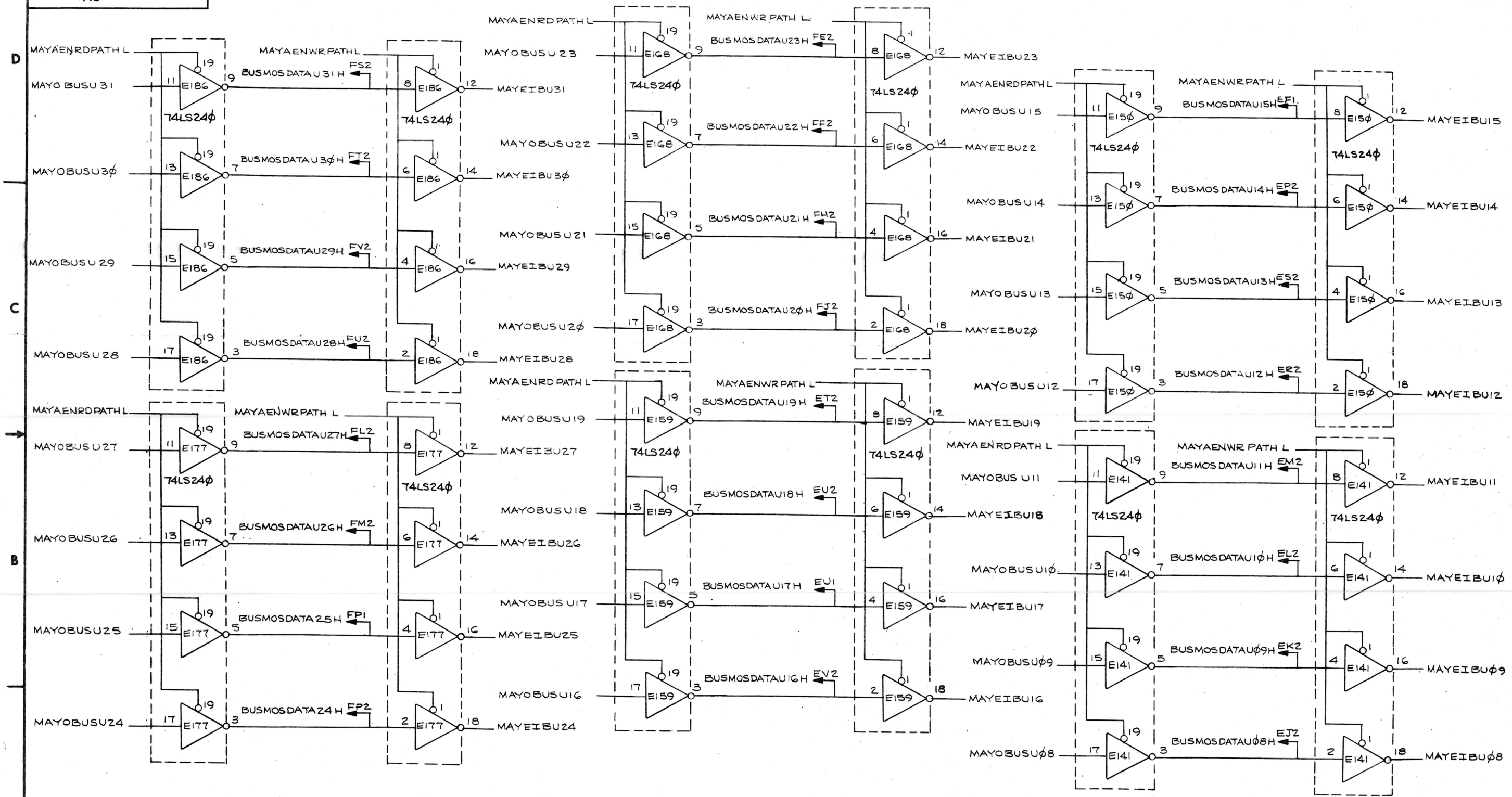


REVISIONS		
CHK	CHANGE NO.	REV.



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DCS M8211-0-1
REV. 1
1-0-1

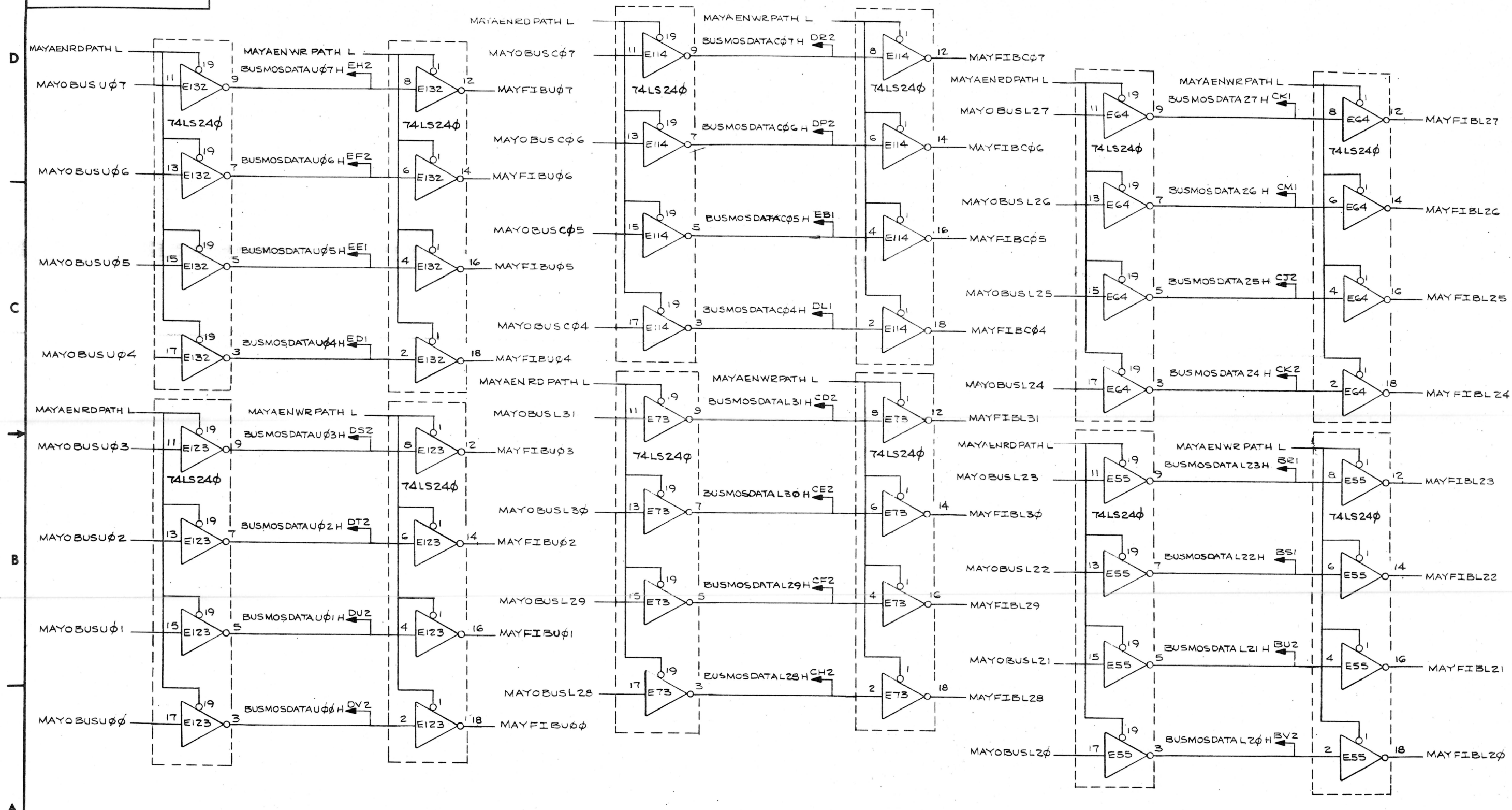


REVISIONS		
CHK	CHANGE NO.	REV.

TITLE STAR MOS MEMORY (16 PIN DESIGN X MAYE)		SIZE CODE	NUMBER	REV.
DCS M8211-0-1				E
SCALE	SHEET 5 OF 17	DIST.		

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REV. E 1-0-1 DCS M8211-0-1



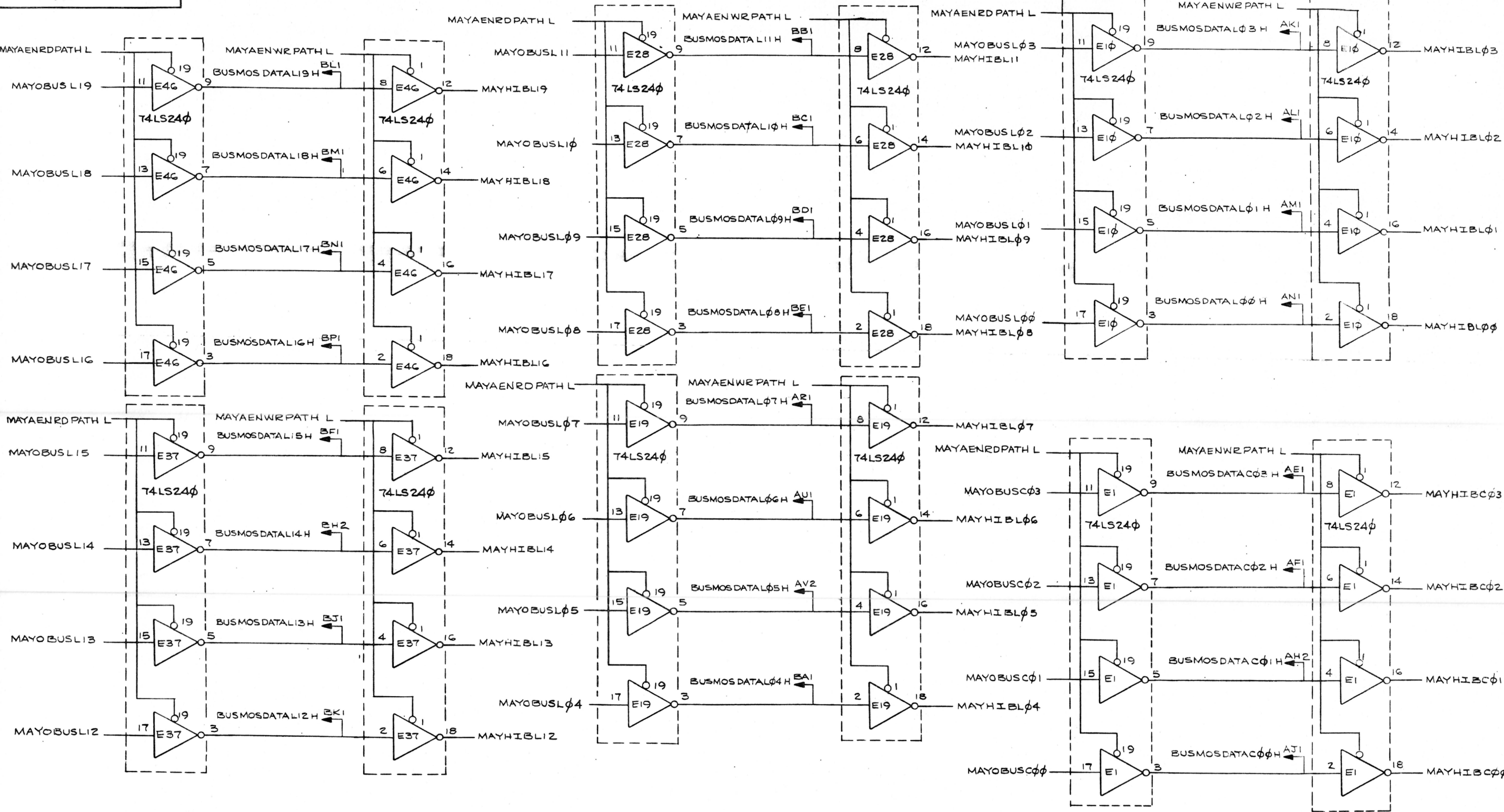
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE		STAR MOS MEMORY (16 PIN DESIGN) (MAYF)	SIZE CODE	NUMBER	REV.
SCALE		1/8"	SHEET	6 OF 17	DIST.

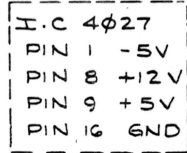
800 120

8 7 6 5 4 3 2 1

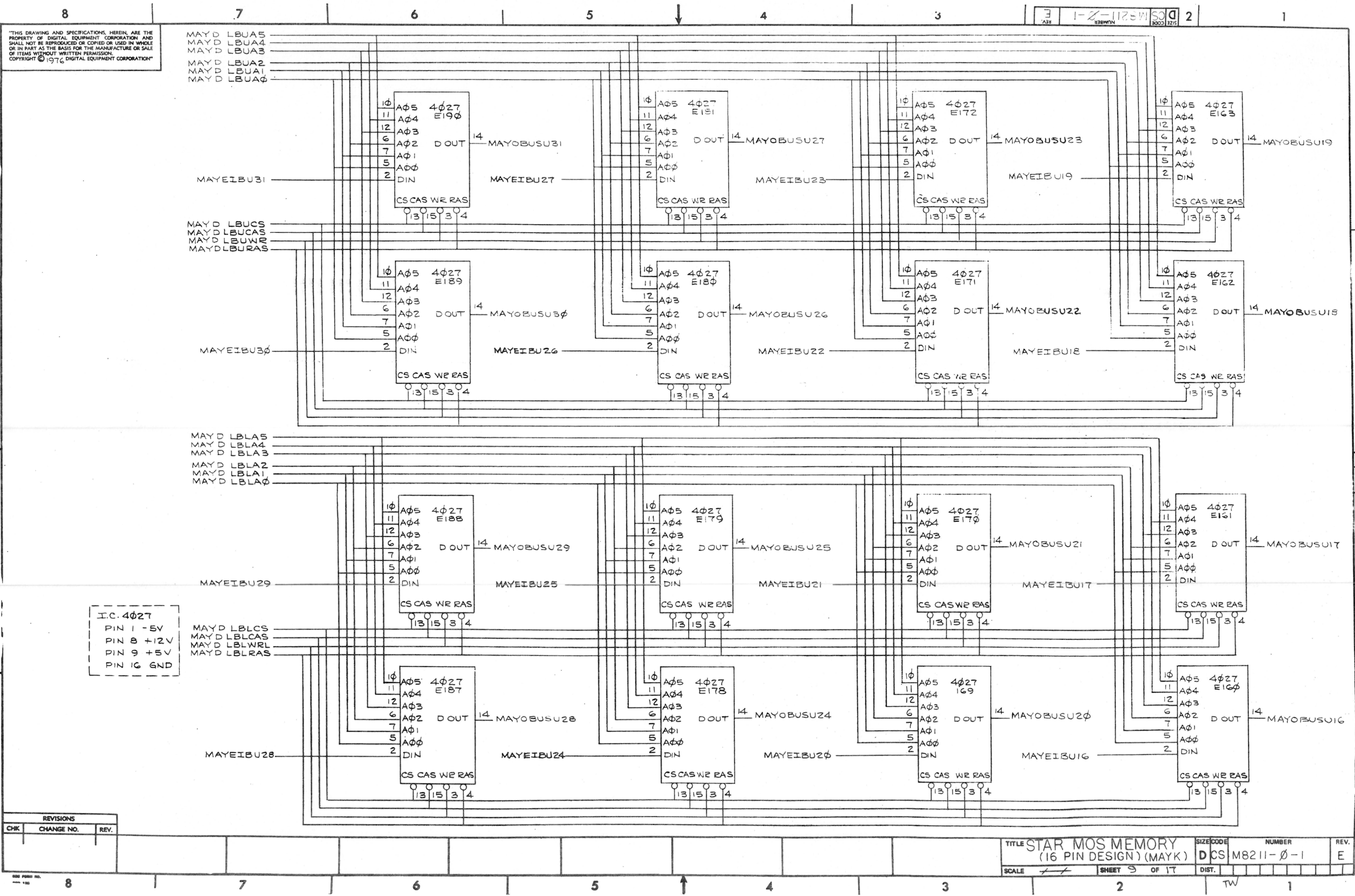
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REVISIONS		
CHK	CHANGE NO.	REV.



REVISIONS		
CHK	CHANGE NO.	REV.



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REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	STAR MOS MEMORY (16 PIN DESIGN) (MAYK)	SIZE CODE	DCS M8211-0-1	NUMBER		REV.	E
SCALE	1/16	SHEET	3	OF	17	DIST.	

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D

C

B

A

MAYC LTUA5
MAYC LTUA4
MAYC LTUA3
MAYC LTUA2
MAYC LTUA1
MAYC LTUA0

MAYC LTUCS
MAYC LTUCAS
MAYC LTUWL
MAYC LTRAS

MAYC LTLA5
MAYC LTLA4
MAYC LTLA3
MAYC LTLA2
MAYC LTLA1
MAYC LTLA0

MAYC LTLCS
MAYC LTLCAS
MAYC LTLWL
MAYC LTLRAS

IC. 4027
PIN 1 -5V
PIN 8 +12V
PIN 9 +5V
PIN 16 GND

REVISIONS		
CHK	CHANGE NO.	REV.

REV. 1-0-1128W DCS M8211-0-1

TITLE STAR MOS MEMORY (16 PIN DESIGN) (MAYL) DCS M8211-0-1
SCALE 1 OF 17 SHEET 10 OF 17
REV. E

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MAYD LBUA5
MAYD LBUA4
MAYD LBUA3
MAYD LBUA2
MAYD LBUA1
MAYD LBUA0

MAYD LBUA5
MAYD LBUA4
MAYD LBUA3
MAYD LBUA2
MAYD LBUA1
MAYD LBUA0

MAYD LBLA5
MAYD LBLA4
MAYD LBLA3
MAYD LBLA2
MAYD LBLA1
MAYD LBLA0

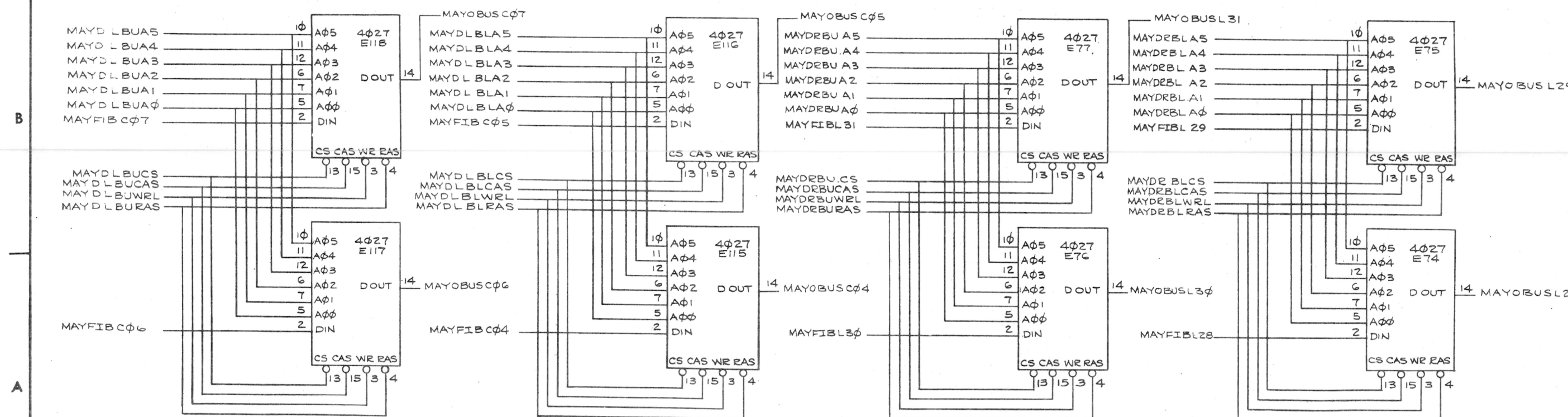
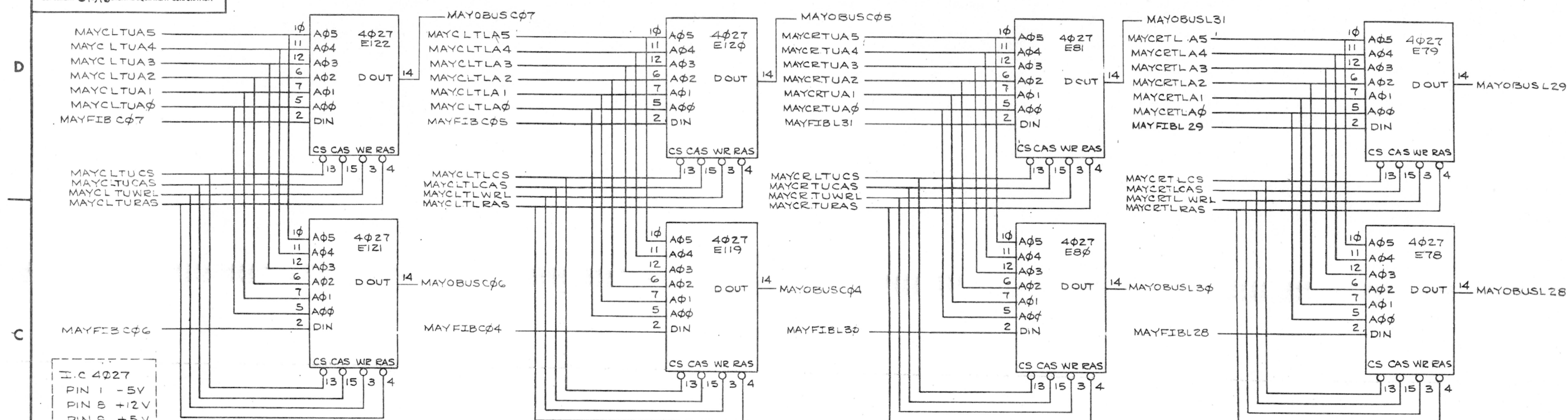
MAYD LBLCS
MAYD LBLCAS
MAYD LBLWEL
MAYD LBLRAS

I.C. 4027
PIN 1 -5V
PIN 8 +12V
PIN 9 +5V
PIN 16 GND

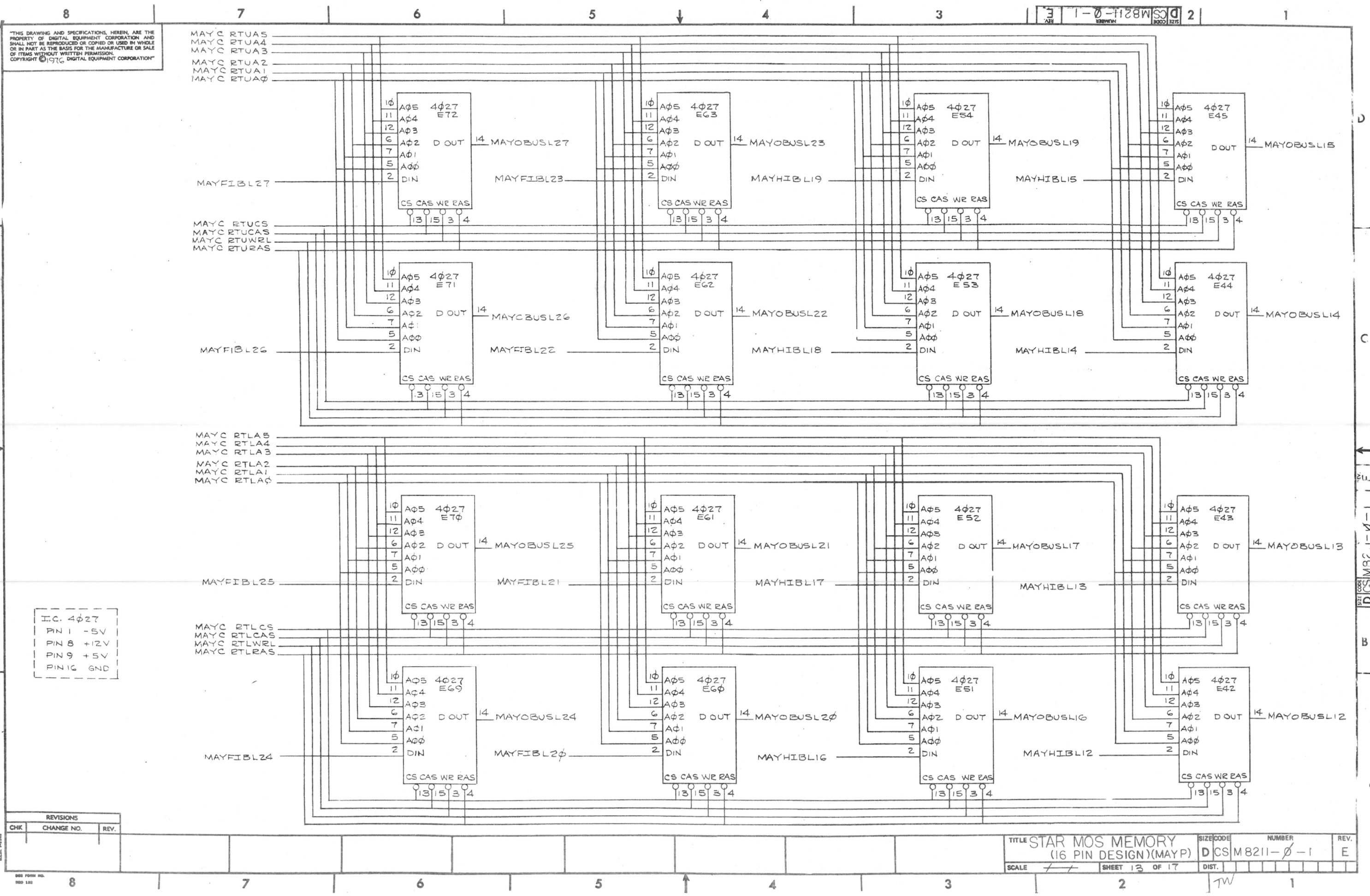
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE		STAR MOS MEMORY (16 PIN DESIGN)(MAY)	SIZE CODE	NUMBER	REV.
SCALE		SHEET 11 OF 17	D	CS M8211-0-1	E
DIST.					

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REVISIONS		
CHK	CHANGE NO.	REV.



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I.C. 4027
PIN 1 -5V
PIN 8 +12V
PIN 9 +5V
PIN 16 GND

REVISIONS		
CHK	CHANGE NO.	REV.

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MAYD RBUA5
MAYD RBUA4
MAYD RBUA3
MAYD RBUA2
MAYD RBUA1
MAYD RBUA0

MAYD RBUCS
MAYD RBUCAS
MAYD RBWRL
MAYD RBURAS

MAYD RBLA5
MAYD RBLA4
MAYD RBLA3
MAYD RBLA2
MAYD RBLA1
MAYD RBLA0

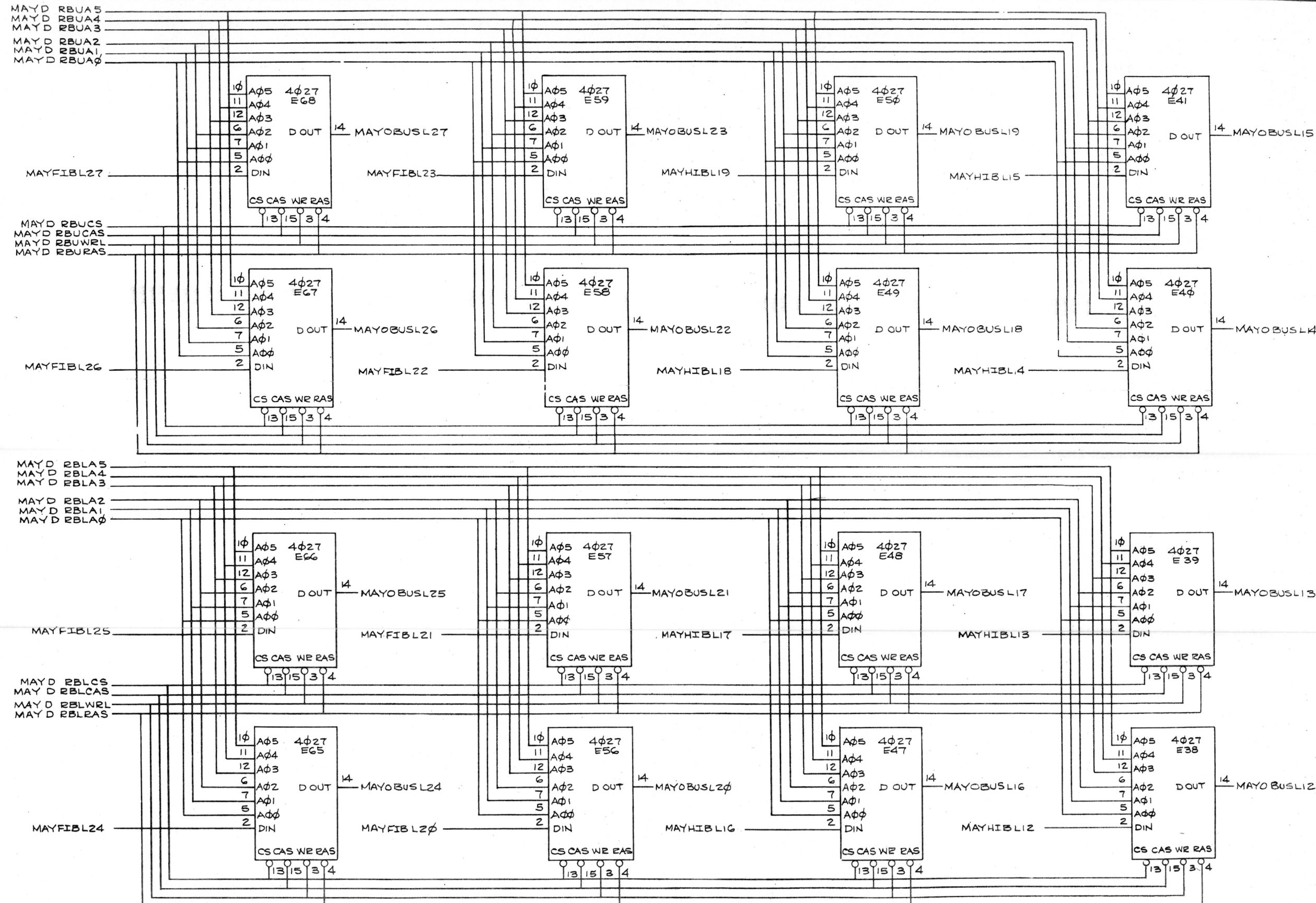
MAYD RBLCS
MAYD RBLCAS
MAYD RBLWRL
MAYD RBLRAS

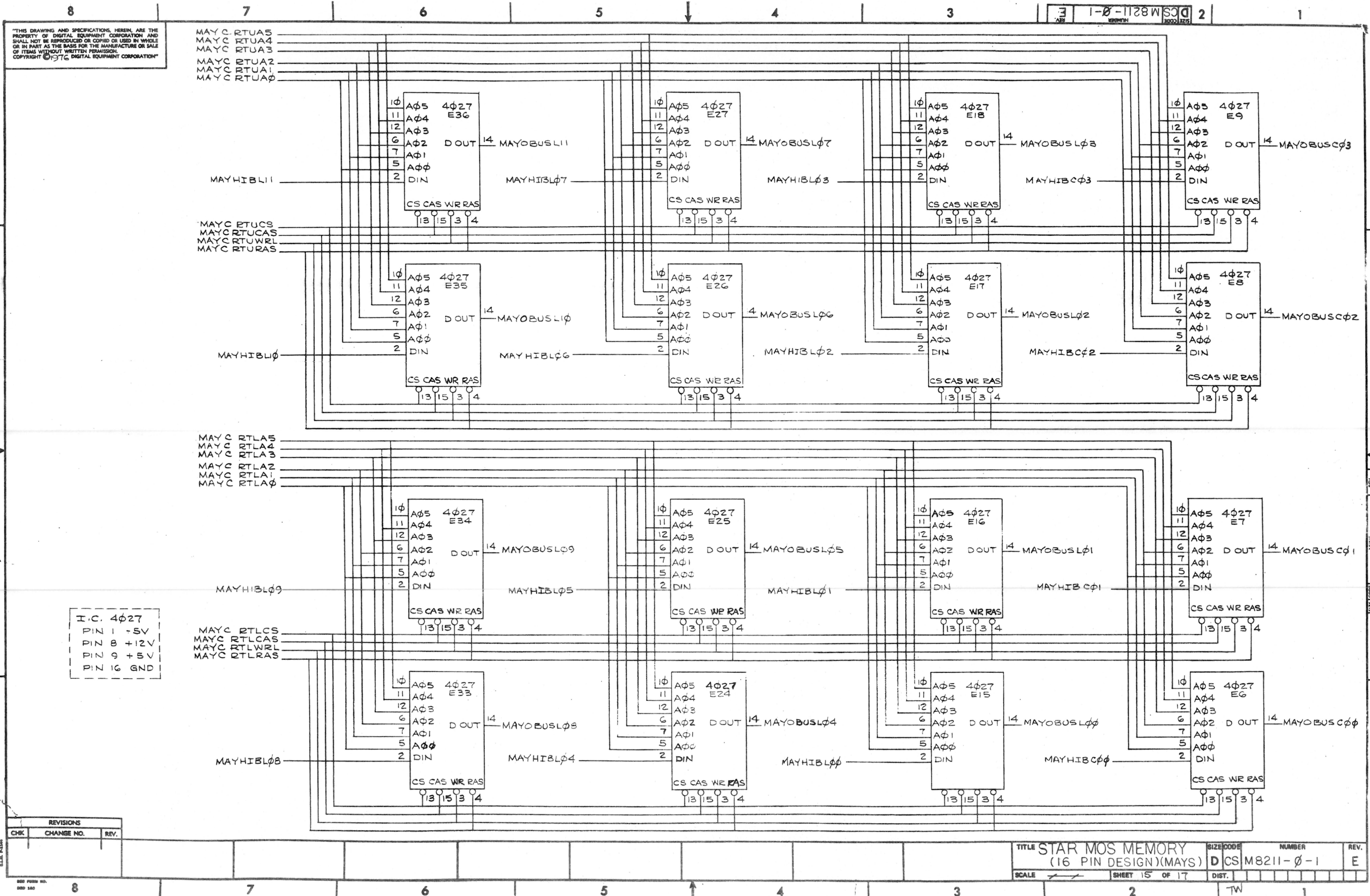
I.C. 4027
PIN 1 -5V
PIN 8 +12V
PIN 9 +5V
PIN 16 GND

REVISIONS		
CHK	CHANGE NO.	REV.

DESIGN NO.

TITLE		STAR MOS MEMORY	SIZE CODE	NUMBER	REV.
		(16 PIN DESIGN) (MAY)	DCS M8211-0-1	E	
SCALE		SHEET 14 OF 17	DIST.		





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I.C. 4027
PIN 1 -5V
PIN 8 +12V
PIN 9 +5V
PIN 16 GND

REVISIONS		
CHK	CHANGE NO.	REV.

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D

C

B

A

MAYD RBUA5
MAYD RBUA4
MAYD RBUA3
MAYD RBUA2
MAYD RBUA1
MAYD RBUA0

MAYD RBUC5
MAYD RBUC4
MAYD RBUC3
MAYD RBUC2
MAYD RBUC1
MAYD RBUC0

MAYD RBLA5
MAYD RBLA4
MAYD RBLA3
MAYD RBLA2
MAYD RBLA1
MAYD RBLA0

MAYD RBLCS
MAYD RBLCAS
MAYD RBLWRL
MAYD RBLRAS

I.C. 4027
PIN 1 -5V
PIN 8 +12V
PIN 9 +5V
PIN 16 GND

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE		STAR MOS MEMORY (16 PIN DESIGN) (MAYT)	SIZE CODE	NUMBER	REV.
SCALE		1/1	SHEET 16 OF 17	DCS M8211-0-1	E

DEC FORM NO.
000 100

8

7

6

5

4

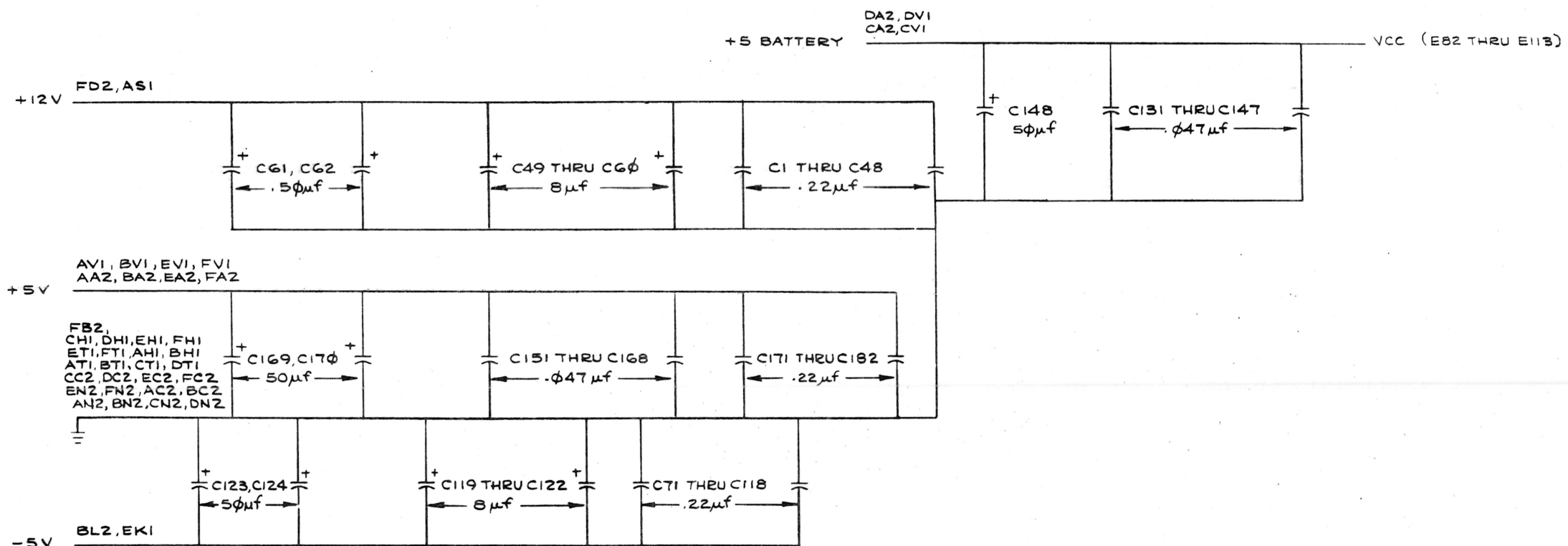
3

2

1

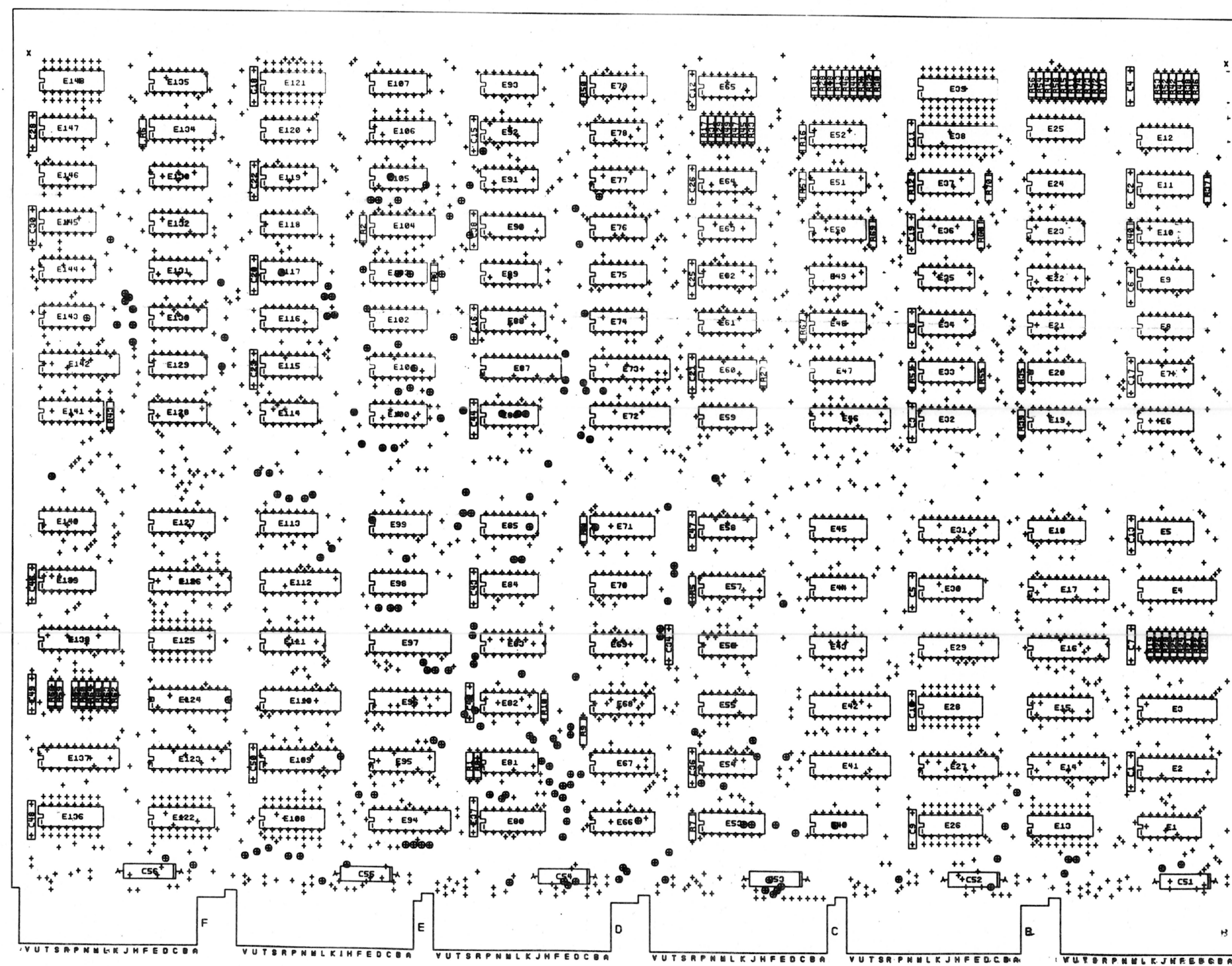
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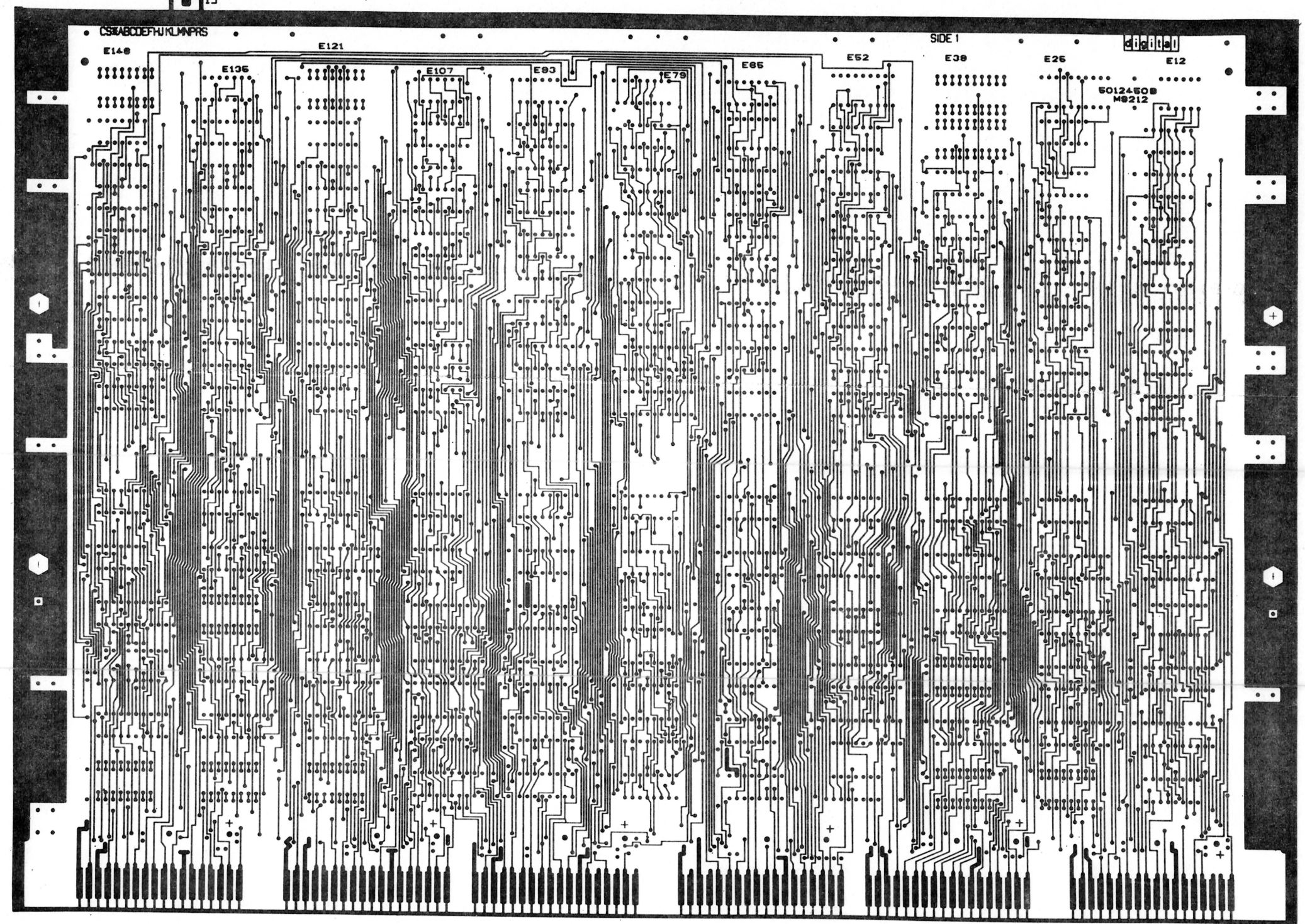
FS1 MAY CHIP 4K L 4K MOS 16K MOS
FRI MAY CHIP 16K L GND OPEN
OPEN GND

REVISIONS		
CHK	CHANGE NO.	REV.



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LAYER 1

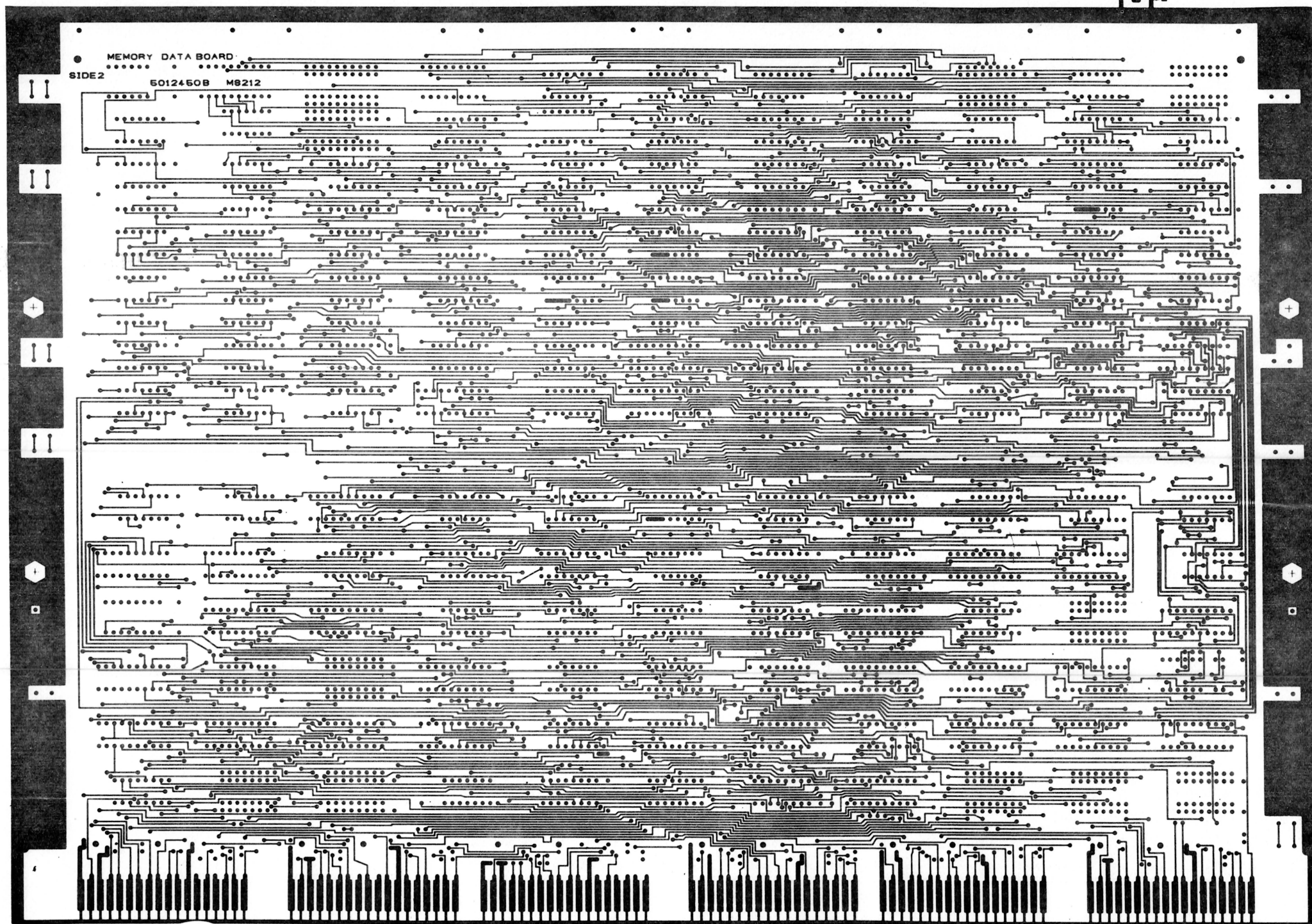


REVISIONS		
CHK	CHANGE NO.	REV.

TITLE MEMORY DATA BOARD		SIZE/COO E UA	NUMBER M8212-0-0	REV. C
SCALE 2-1	SHEET 2 OF 3	DIST.		

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P 83YAJ



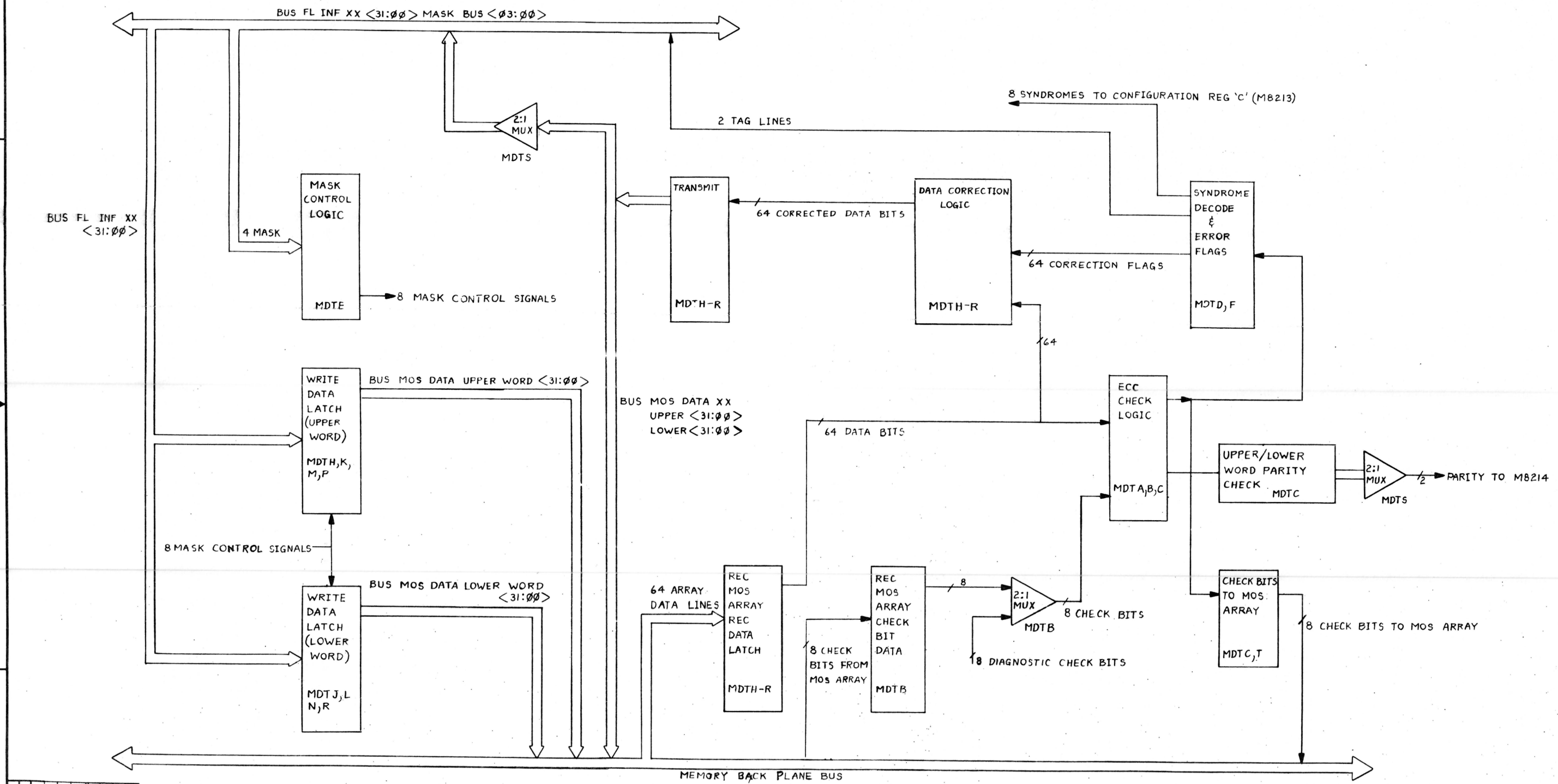
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE		SIZE CODE		NUMBER		REV.	
MEMORY DATA BOARD		E UA		M8212-0-0		C	
SCALE		SHEET		DIST.			
2-1		3 OF 3					
2		3		Zh		1	

DIGITAL EQUIPMENT CORPORATION PARTS LIST				QUANTITY / VARIATION												NOTES:			
MADE BY L. REYNOLDS DATE OCT 3 77		CHECKED <i>L. Jamin</i> DATE 7-22-77		SECTION														ETCH REV B CS REV A 104766	
ENG <i>J. J. Duran</i> DATE 7-28-77		PROD <i>Nick Teulla</i> DATE 8-2-77		ISSUED SECTION														REF DESIGNATION	
ITEM NO.	DRAWING NO.	PART NO.	DESCRIPTION	M8212	M8212-YA														
1	D-MD-5012450-0-0	5012450	ETCH BOARD	1	1														
2		10-12784	CAPACITOR, .047 UF 50 V	38	38												C1-C13,C15-C23,C25,C26,C28,C30,C34,C36-C38,C42-C44,C46-C50		
3		10-12084-01	CAPACITOR, 8 UF 25 V	6	6												C51-C56		
4		13-00365	RESISTOR, 1K,1/4W.5%	73	73												R2-R74		
5		19-11573	I.C. DEC 74S280	29	29												E7,E9,E11,E12,E20,E24,E25,E34,E37,E48,E51,E52,E61,E62,E63,E65,E74-E79,E100,E115,E130,E132,E143,E145,E10		
6		1913493	I.C. DEC 74S241	2	2												E72,E73		
7		1913340	I.C. DEC 74S32	1	1												E55		
8		19-12389	I.C. DEC 74S08	5	5												E54,E64,E86,E102,E105		
9		19-10534	I.C. DEC 74S04	5	5												E59,E70,E91,E116,E147		
10																			
11		19-11675	I.C. DEC 74S138	3	3												E90,E106,E134		
12		19-11983	I.C. DEC 74S133	1	1												E68		
13		19-10532	I.C. DEC 74S00	4	4												E40,E43,E84,E107		
14		19-10549	I.C. DEC 74S158	4	4												E53,E83,E88,E101		
15		19-10957	I.C. DEC 74S175	2	2												E66,E67		
16		19-12746	I.C. DEC 74S37	1	1												E82		
17		19-12388	I.C. DEC 74S02	2	2												E92,E120		
18		19-10545	I.C. DEC 74S112	1	1												E104		
ECO. NO. M8212-TW001 M8212-TW002																			
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				SHEET 1 OF 2				INSERTION PARTS LIST DATA BASE REV											

DIGITAL EQUIPMENT CORPORATION PARTS LIST				QUANTITY / VARIATION												NOTES:							
MADE BY DATE		L. REYNOLDS OCT 3 77		CHECKED DATE		L. Guzman 7-22-77		SECTION														ETCH REV B CS REV A 104766	
ENG DATE		J. Duran 7-28-77		PROD DATE		Mike Tulla 8-2-77		ISSUED SECTION															
ITEM NO.	DRAWING NO.	PART NO.	DESCRIPTION	M8212	M8212-YA												REF DESIGNATION						
19		19-12855	I.C. DEC 74LS195	1	1												E71						
20		19-10537	I.C. DEC 74S11	4	4												E56,E58,E85,E103						
21		19-10539	I.C. DEC 74S20	2	2												E69,E93						
22		19-12833	I.C. DEC 74LS109	1	1												E57						
23		19-10533	I.C. DEC 74S03	1	0												E81						
24		19-11641	I.C. DEC 74S257	9	9												E1,E15,E30,E47,E80,E95,E111,E127,E141						
25		19-12805	I.C. DEC 74LS08	16	16												E8,E21,E22,E23,E35,E36,E49,E50,E89,E117,E118,E119,E131,E133,E144,E146						
26		19-12096	I.C. DEC 74S06	18	18												E5,E6,E18,E19,E32,E33,E44,E45,E60,E98,E99,E113,E114,E128,E129,E135,E139,E140						
27		19-13670-00	I.C. DEC 74S373	25	25												E2,E3,E4,E16,E17,E27,E29,E31,E41,E42,E46,E87,E94,E96,E97,E109,E110,E112,E123,E124,E126,E137,E138,E142,E14						
28		SPARES	I.C. DEC	11	11												E13,E26,E28,E39,E121,E125,E136,E148 E38,E108,E122						
29		12-10711-02	HANDLE ASSY	1	1																		
30		90-00024-01	EYELETS	12	12																		
31		13-01890	RESISTOR, 560Ω, 1/4W, 5%	1	1												R1						
32		19-15019	IC DEC 74S38	0	1												E81						
E.C.O. NO.																							
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				SHEET 2 OF 2				INSERTION PARTS LIST DATA BASE REV															

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REV.	CHG.	NO.	DATE	BY	CHK.
B					
A					

REVISIONS

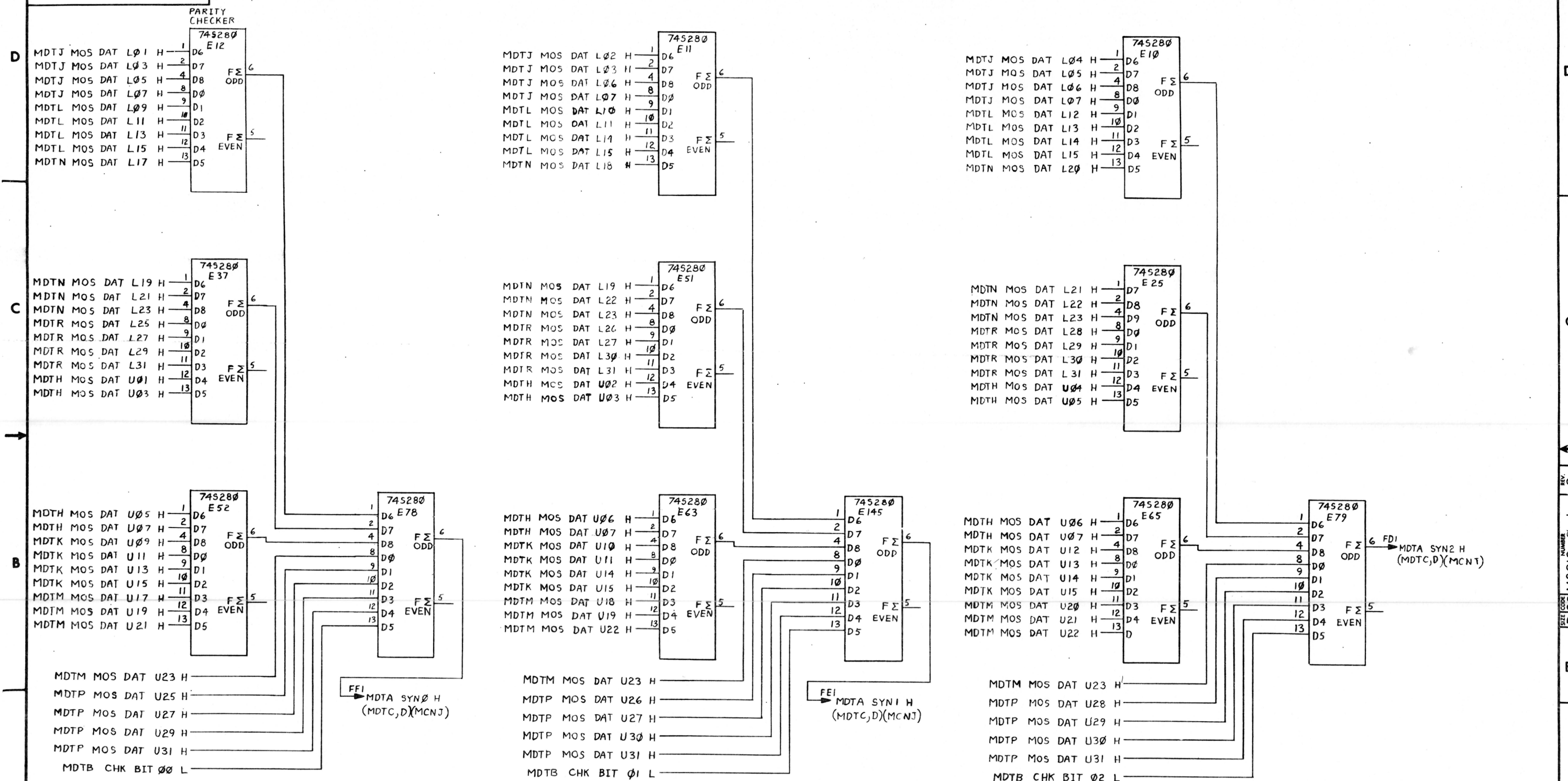
1	MDTB	1-15-80	P. RADO
2	MDTB	1-15-80	P. RADO
3	MDTB	1-15-80	P. RADO
4	MDTB	1-15-80	P. RADO
5	MDTB	1-15-80	P. RADO
6	MDTB	1-15-80	P. RADO
7	MDTB	1-15-80	P. RADO
8	MDTB	1-15-80	P. RADO

(BLOCK DIAGRAM) (SLOT 18)

DRN. AFM	6/8/77	FIRST USED ON	
CHK'D	7/20/77	TITLE	MEMORY DATA BOARD
ENG.	7/20/77	PROJ. ENG.	7/20/77
PROD. ENG.	7/20/77	PROJ. ENG.	7/20/77
NEXT HIGHER ASSY.			
SCALE	1 OF 19	SIZE CODE	D
SHEET	1 OF 19	NUMBER	CS M8212-0-1
		REV.	C

TW1

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REVISIONS		
CHK	CHANGE NO.	REV.

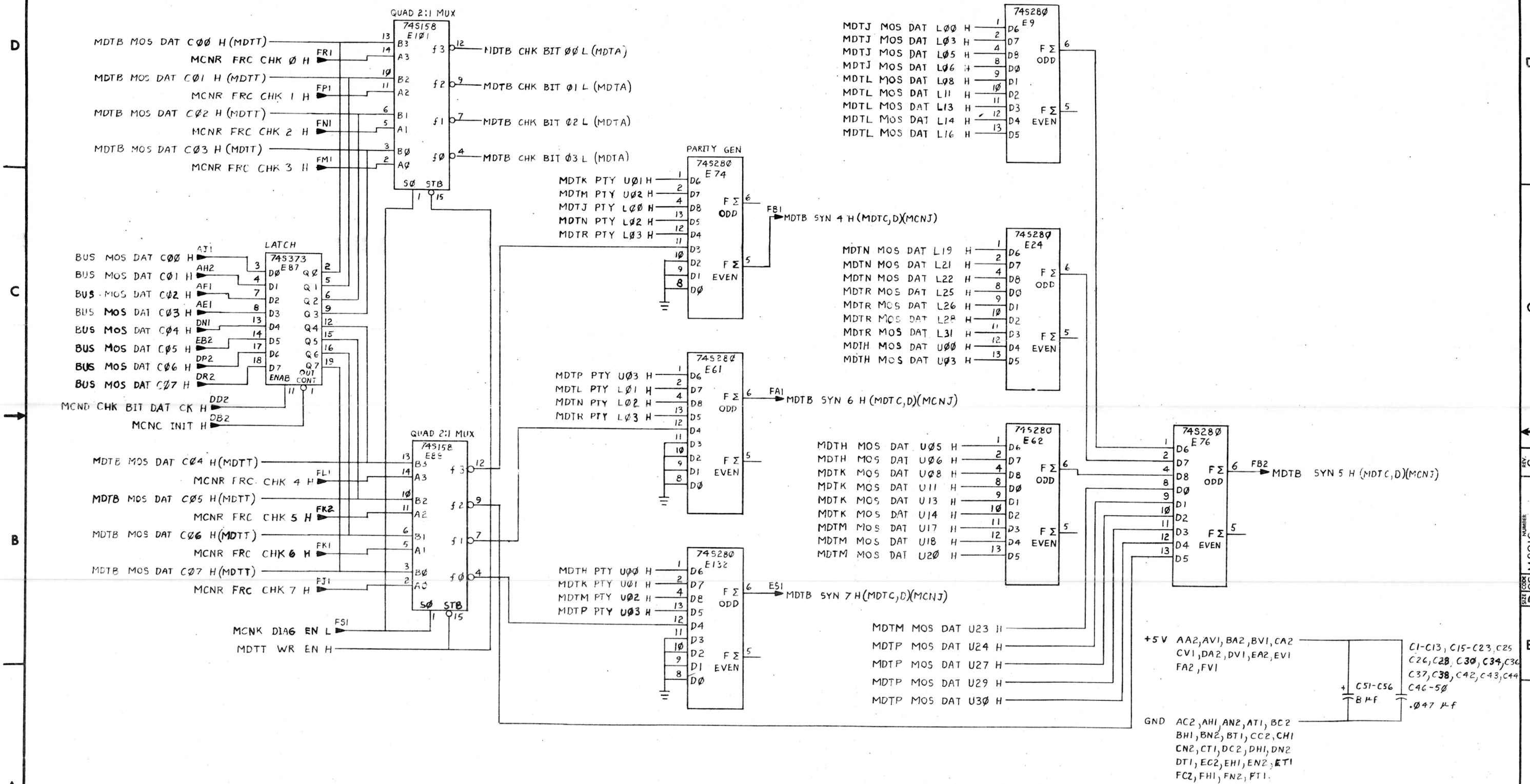
(SYNDROME CHECK & CHECK BIT ENCODE) (SLOT 18)

TITLE	MEMORY DATA BOARD (MDTA)	SIZE	CODE	NUMBER	REV.
		D	CS	M8212-0-1	C

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1-0-21228W DCS M8212-0-1

1



REVISIONS		
CHK	CHANGE NO.	REV.

(SYNDROME CHECK & CHECK BIT ENCODE) (SLOT 18)

TITLE	SIZE CODE	NUMBER	REV.
MEMORY DATA BOARD (MDTB)	DCS	M8212-0-1	C
SCALE	H	SHEET 3 OF 19	DIST.

TITLE		SIZE	CODE	NUMBER	REV.
MEMORY DATA BOARD (MDBC)		D	CS	M8212-0-1	C
SCALE	SHEET	OF			
1/2"	4	19			
DIST.					

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MDTA SYN 0 H
MDTA SYN 1 H
MDTA SYN 2 H

+5V
R6
1KΩ

3:8 DEMUX
74S138
E134

SEL A
SEL B
SEL C

EN

74S138
E106

SEL A
SEL B
SEL C

EN

74S138
E90

SEL A
SEL B
SEL C

EN

MDTD COR EN H
74S04
E116

MDTD BIT 00 H (MDTF)

MDTD BIT 01 H (MDTF)

MDTD BIT 02 H (MDTF)

MDTD BIT 03 H (MDTF)

MDTD BIT 04 H (MDTF)

MDTD BIT 05 H (MDTF)

MDTD BIT 06 H (MDTF)

MDTD BIT 07 H (MDTF)

MDTD COR BYT L00 (MDTF)

MDTD COR BYT L01 (MDTF)

MDTD COR BYT L02 (MDTF)

MDTD COR BYT L03 (MDTF)

MDTD COR BYT U00 (MDTF)

MDTD COR BYT U01 (MDTF)

MDTD COR BYT U02 (MDTF)

MDTD COR BYT U03 (MDTF)

PARITY CHECK
74S280
E77

MDTA SYN 0 H
MDTA SYN 1 H
MDTA SYN 2 H
MDTC SYN 3 H
MDTB SYN 4 H
MDTB SYN 5 H
MDTB SYN 6 H
MDTB SYN 7 H

MDTA SYN 0 H
MDTA SYN 1 H

MDTA SYN 2 H
MDTC SYN 3 H

MDTB SYN 4 H
MDTB SYN 5 H

MDTB SYN 6 H
MDTB SYN 7 H

MDTD UNCOR ER H
MCNC TAG CLK L
MCNA CLR L

MDTD COR EN H
MCNJ CRD INH L

MDTD UNCOR ER H (MDTT)

MDTD COR EN H

MDTD RD ER H (MCNA,C)

MDTD XMT TAG 1 H (MDTS)

MDTD XMT TAG 0 H (MDTS)

REVISIONS		
CHK	CHANGE NO.	REV.

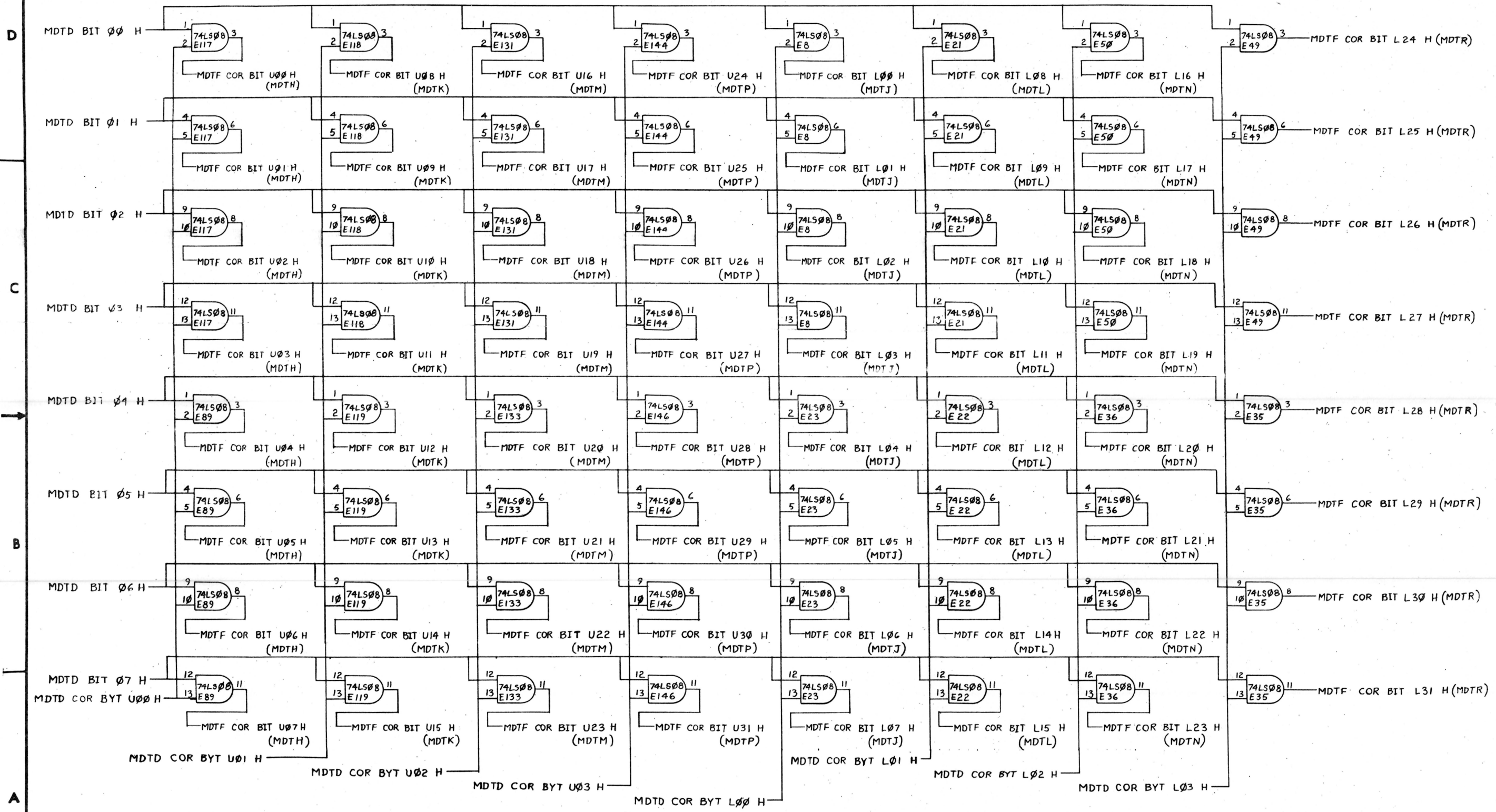
(ERROR DETECT & TAG GENERATION) (SLOT 18)

TITLE	SIZE/ CODE	NUMBER	REV.
MEMORY DATA BOARD (MDTD)	D CS	M8212-0-1	C
SCALE	SHEET	5 OF 19	DIST.

1



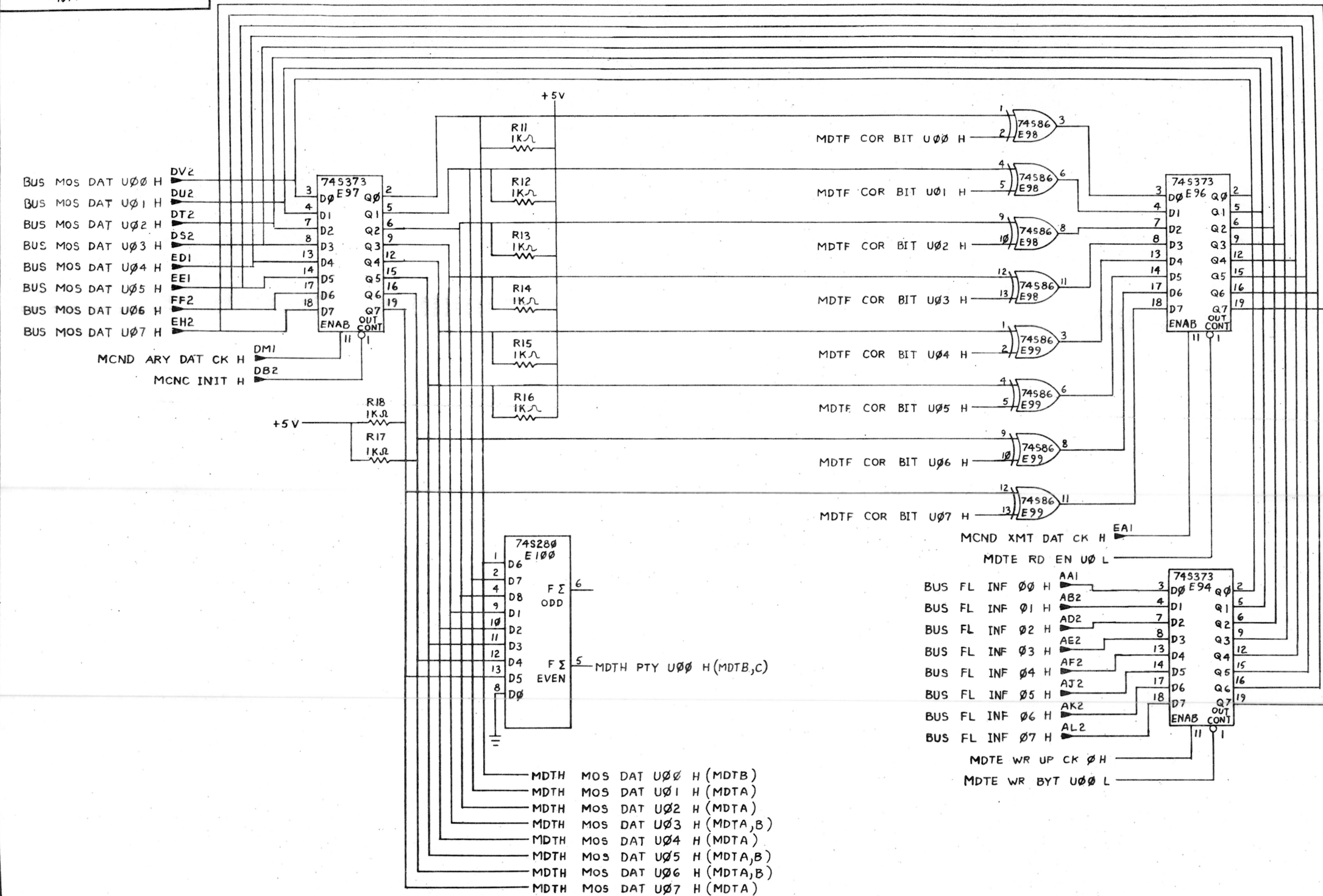
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REVISIONS		
CHK	CHANGE NO.	REV.

(BIT CORRECTION FLAGS)		(SLOT 18)	
TITLE	MEMORY DATA BOARD (MDTB)	SIZE/CODE	NUMBER
SCALE	1:1	D CS	M8212-0-1
SHEET	7 OF 19	DIST.	

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REVISIONS		
CHK	CHANGE NO.	REV.

DES FORM NO. 500 100

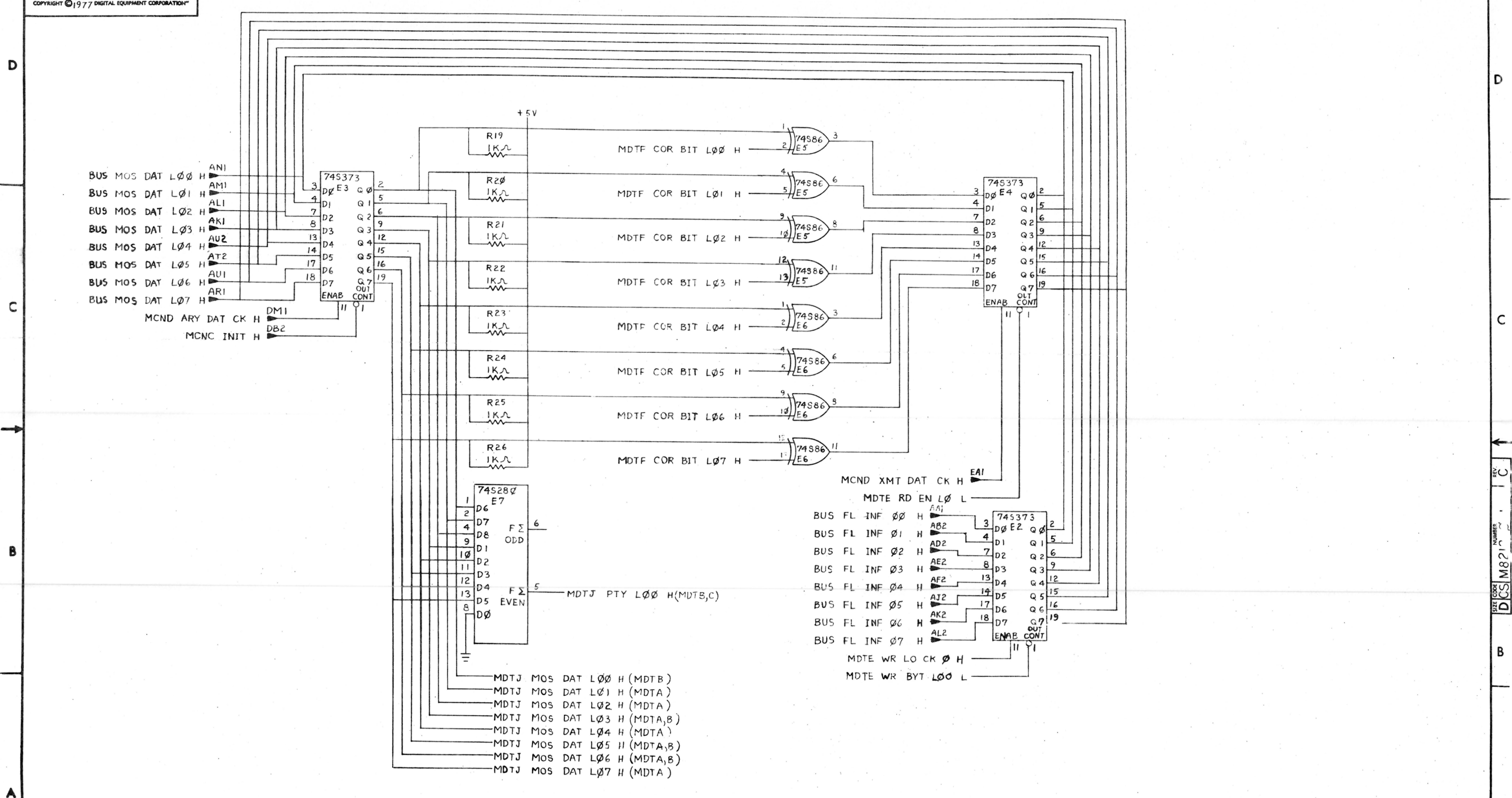
(DATA RECEIVE & XMIT LATCHES)

(SLOT 18)

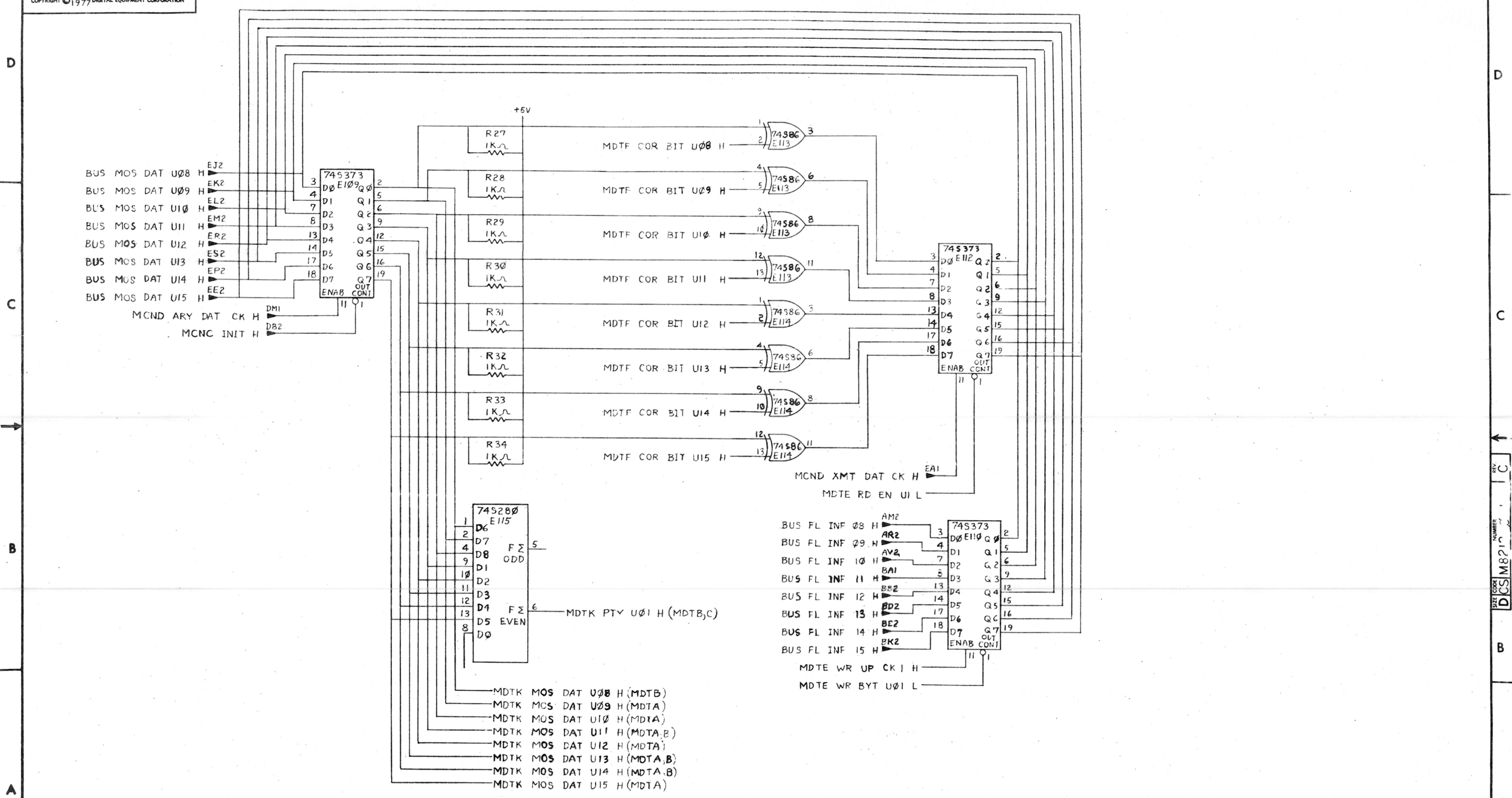
TITLE		SIZE	CODE	NUMBER	REV.
MEMORY DATA BOARD (MDTH)		D	CS	M8212-0-1	C
SCALE	++	SHEET	8 OF 19	DIST.	

TW 1

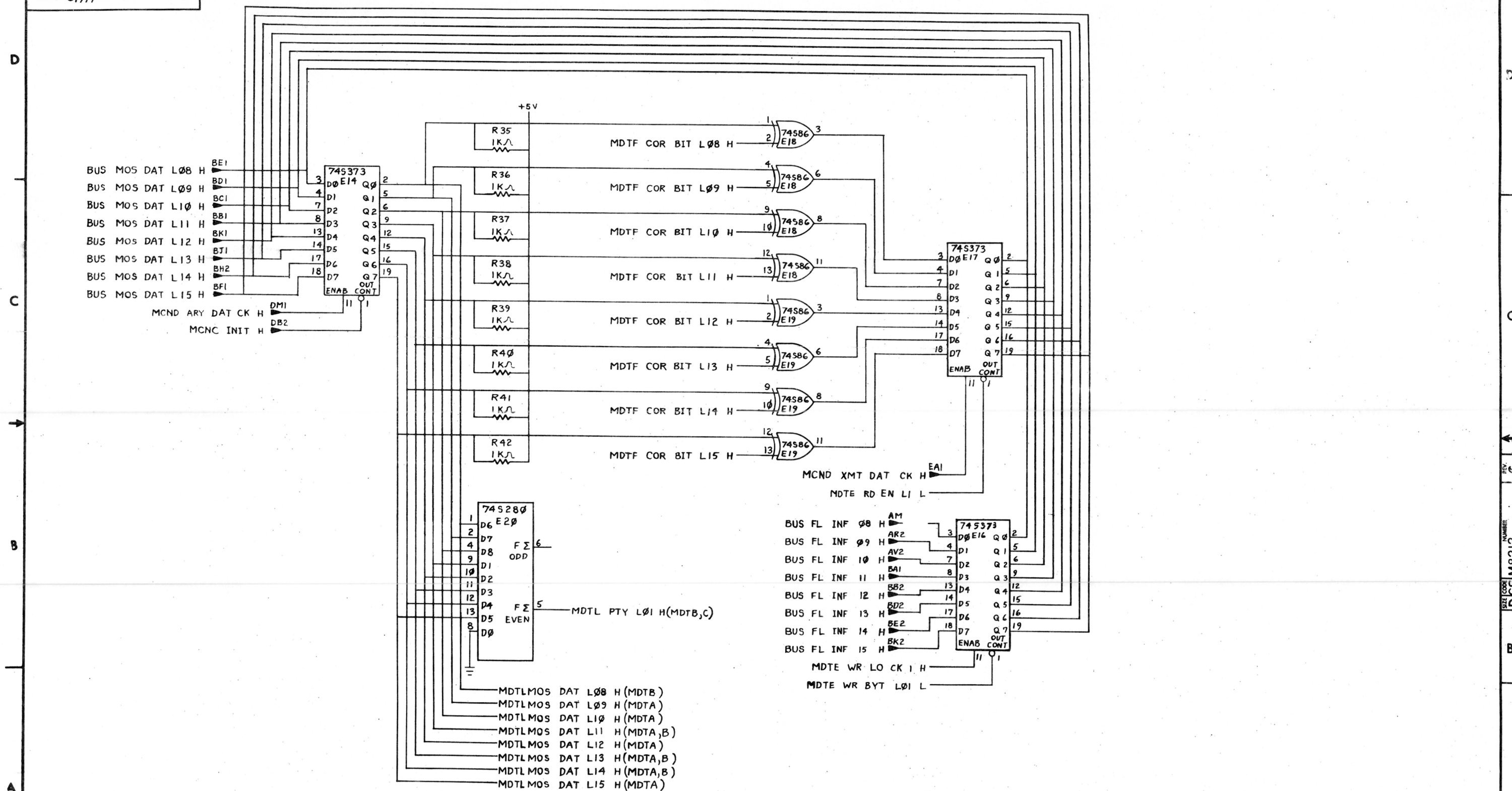
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REVISIONS		
CHK	CHANGE NO.	REV.



REVISIONS		
CHK	CHANGE NO.	REV.

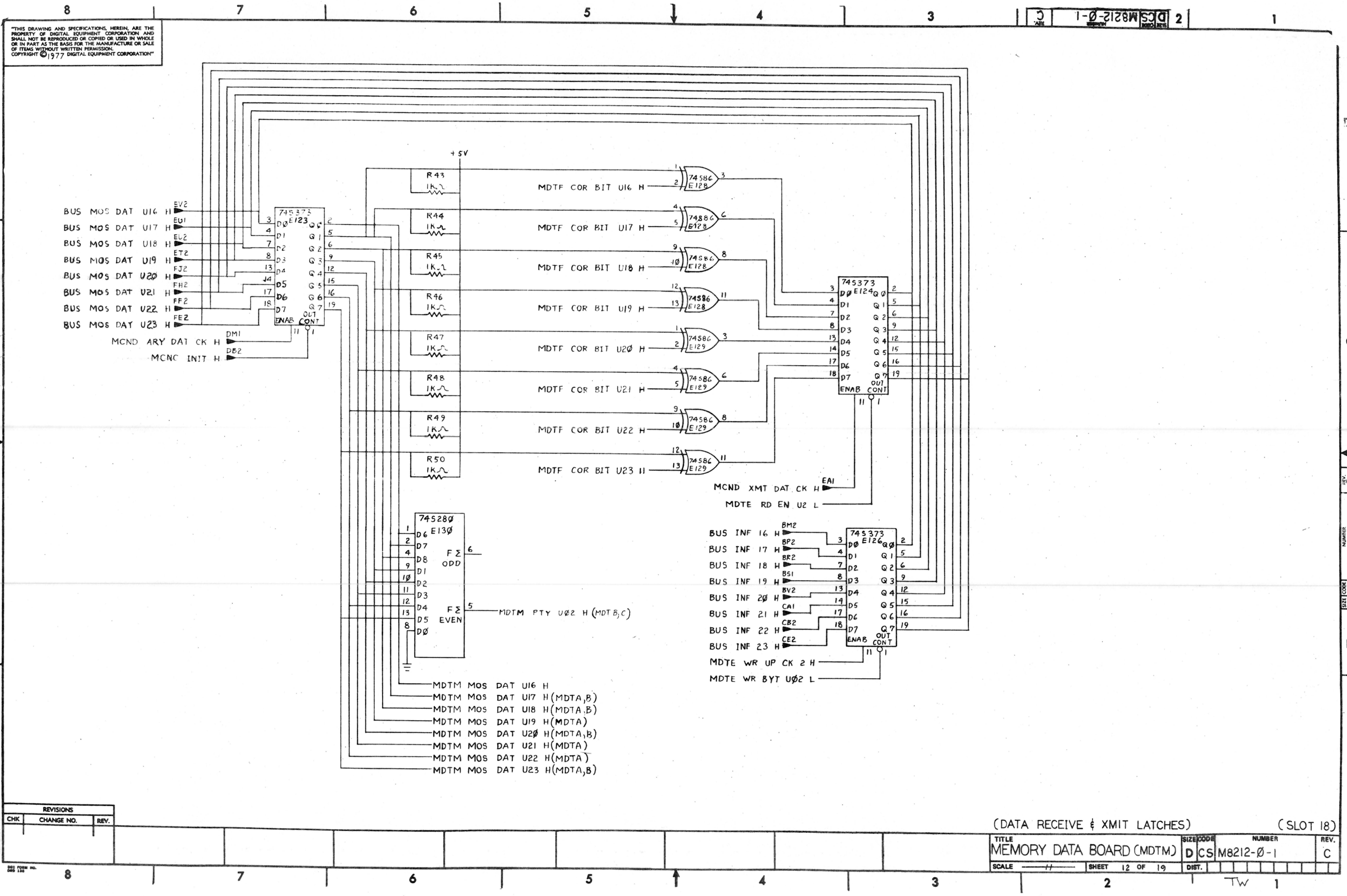


REVISIONS		
CHK	CHANGE NO.	REV.

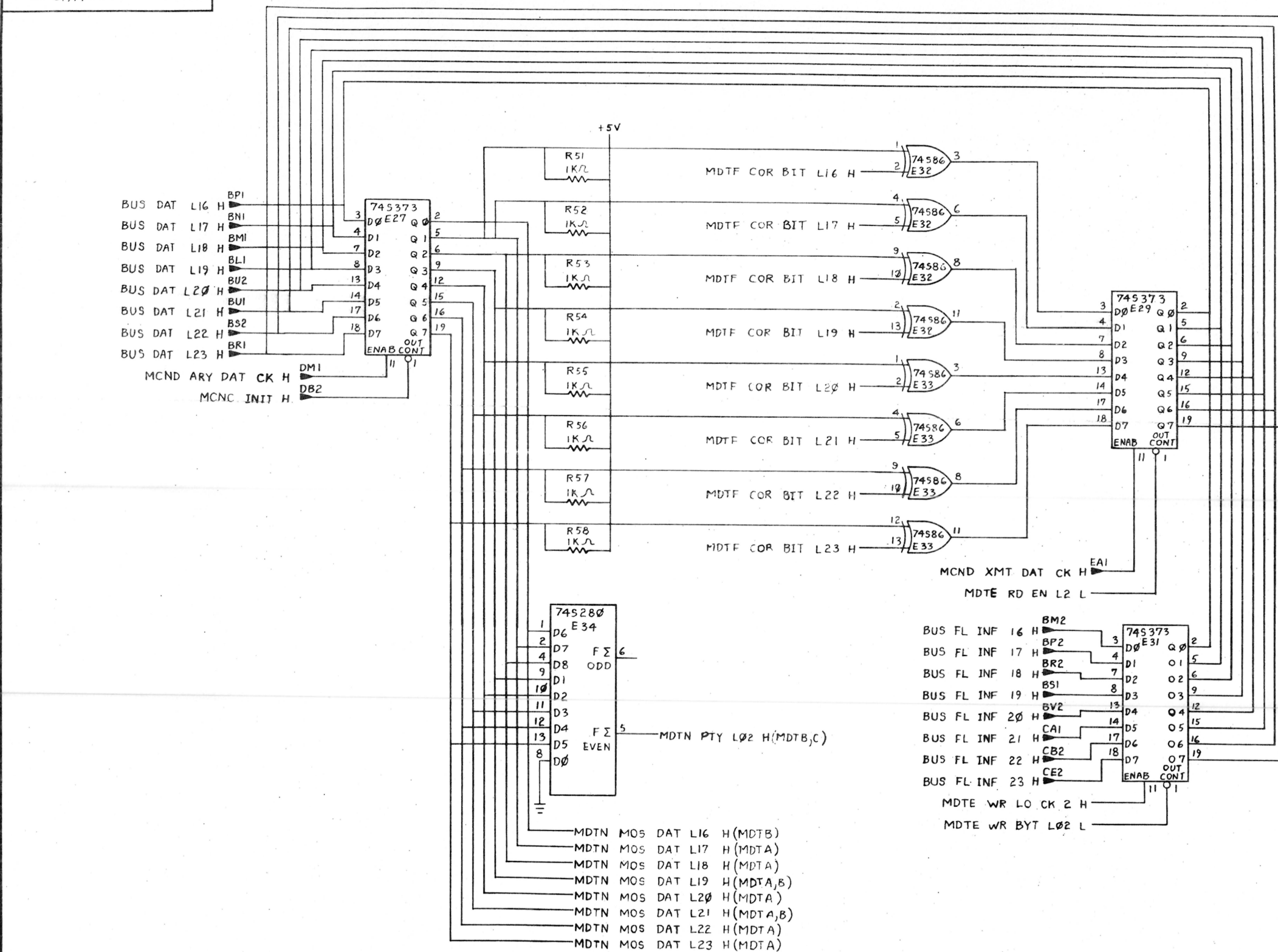
(DATA RECEIVE & XMIT LATCHES)

(SLOT 18)

TITLE		SIZE CODE		NUMBER		REV.	
MEMORY DATA BOARD (MDTL)		D C S		M8212-0-1		C	
SCALE $\frac{1}{1}$		SHEET 11 OF 19		DIST.			



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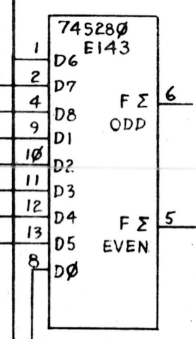
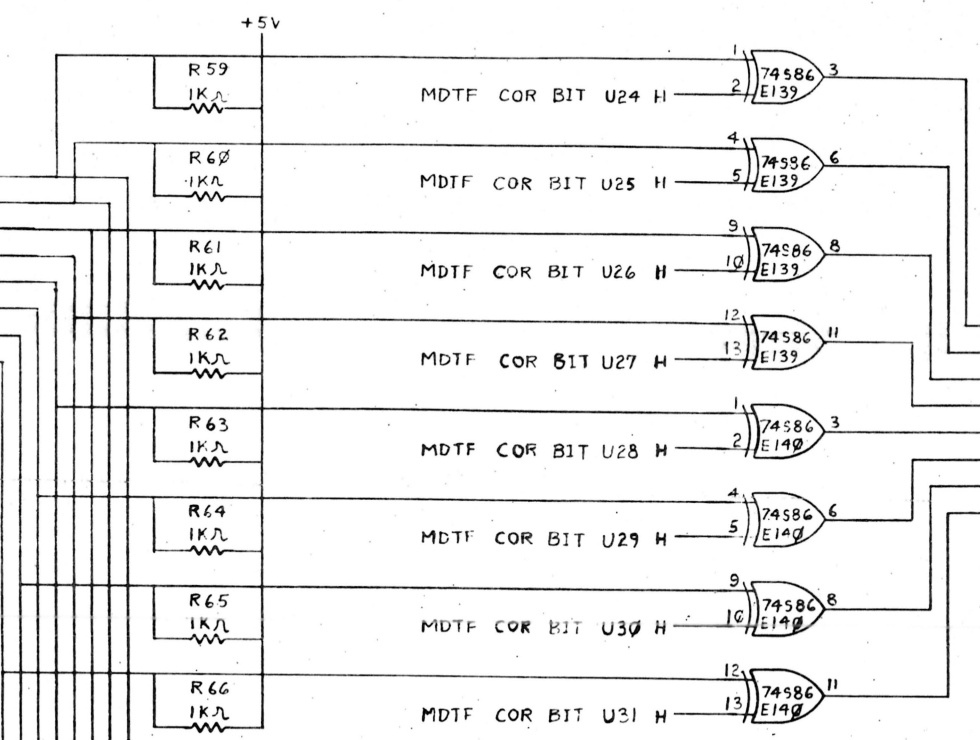
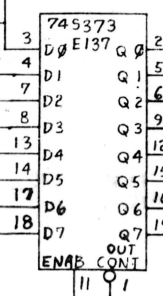
(DATA RECEIVE & XMIT LATCHES) (SLOT 18)

TITLE	SIZE CODE	NUMBER	REV.
MEMORY DATA BOARD (MDTN)	D	CS M8212-0-1	C
SCALE	SHEET	13 OF 19	DIST.

CHK	CHANGE NO.	REV.

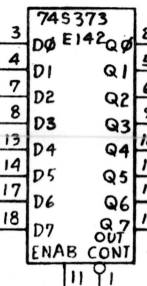
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BUS MOS DAT U24 H
BUS MOS DAT U25 H
BUS MOS DAT U26 H
BUS MOS DAT U27 H
BUS MOS DAT U28 H
BUS MOS DAT U29 H
BUS MOS DAT U30 H
BUS MOS DAT U31 H
MCND ARY DAT CK H
MCND INIT H



MDTP MOS DAT U24 H (MDTB)
MDTP MOS DAT U25 H (MDTA)
MDTP MOS DAT U26 H (MDTA)
MDTP MOS DAT U27 H (MDTA,B)
MDTP MOS DAT U28 H (MDTA)
MDTP MOS DAT U29 H (MDTA,B)
MDTP MOS DAT U30 H (MDTA,B)
MDTP MOS DAT U31 H (MDTA)

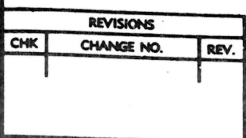
BUS FL INF 24 H
BUS FL INF 25 H
BUS FL INF 26 H
BUS FL INF 27 H
BUS FL INF 28 H
BUS FL INF 29 H
BUS FL INF 30 H
BUS FL INF 31 H
MDTE WR UP CK 3 H
MDTE WR BYT U03 L



REVISIONS		
CHK	CHANGE NO.	REV.

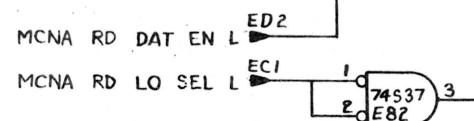
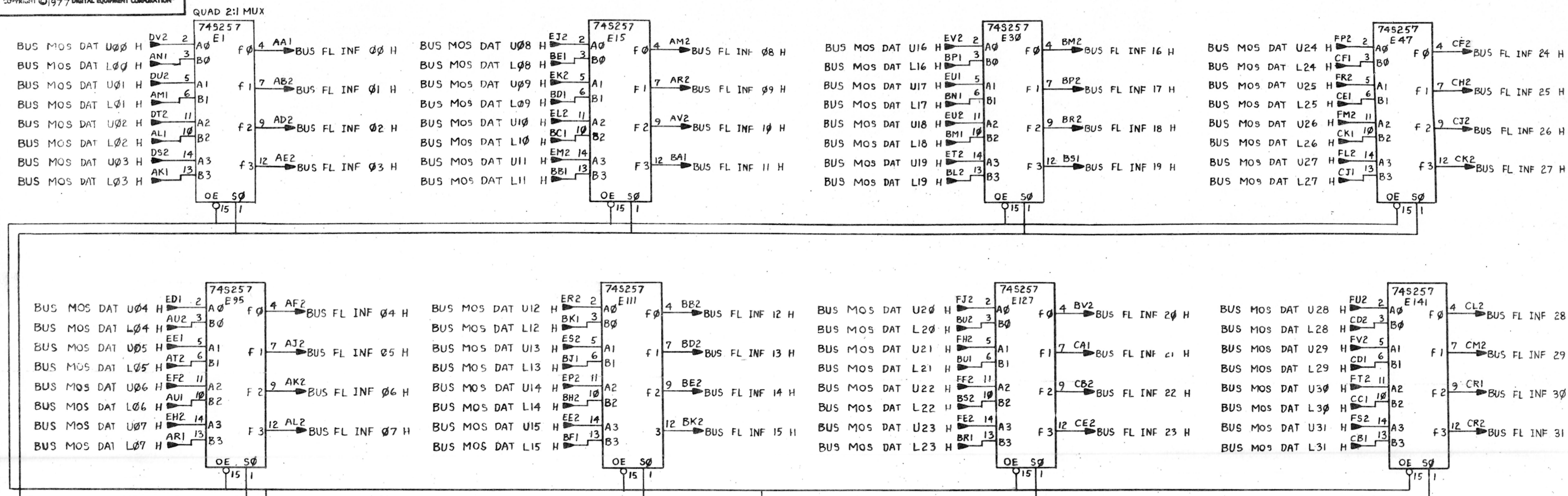
(DATA RECEIVE & XMIT LATCHES) (SLOT 18)

TITLE	SIZE CODE	NUMBER	REV.
MEMORY DATA BOARD (MDTP)	DCS	M8212-0-1	C
SCALE	SHEET	14 OF 19	DIST.

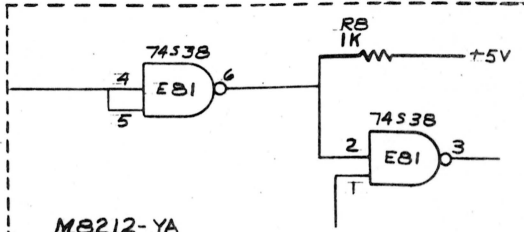
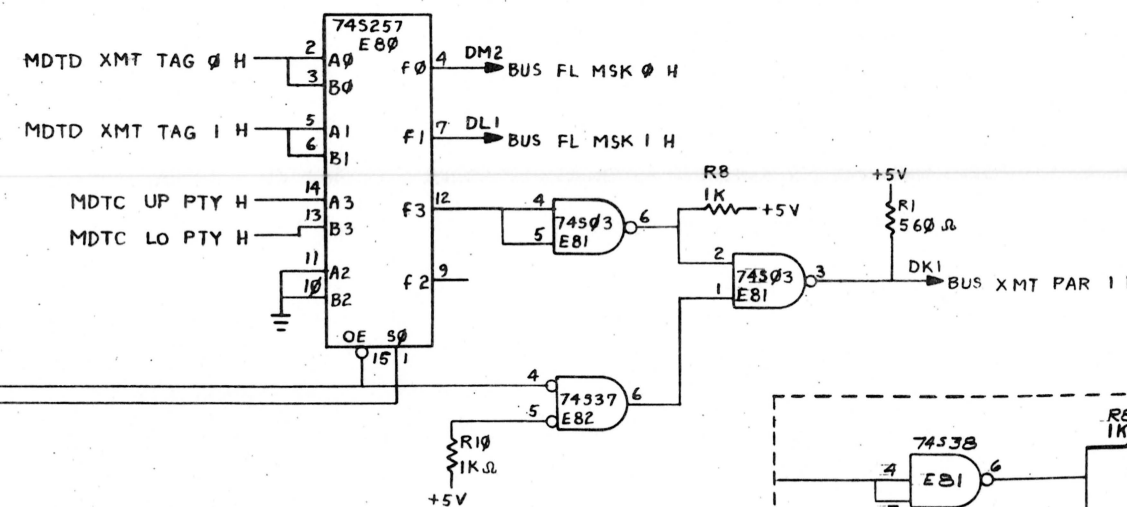


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1-0-2128W



74S257 FUNCTION TABLE				
INPUTS		OUTPUTS		
OE	S0	A	B	F
L	L	L	X	L
L	L	H	X	H
L	H	X	L	L
L	H	X	H	H



(MEMORY ARRAY DATA XMIT MUX) (SLOT 18)

TITLE
MEMORY DATA BOARD (MTS)

SIZE CODE
D CS M8212-0-1

NUMBER
1

REV.
C

SCALE
H

SHEET
16 OF 19

DIST.

A BRIEF DESCRIPTION OF THE ECC (ERROR CHECKING & CORRECTION)

Δ ECC MATRIX:

FOR SINGLE BIT ERROR AN ODD NUMBER OF SYNDROME BITS WILL BE "1"s AND FOR DOUBLE BIT ERRORS AN EVEN NUMBER OF SYNDROME BITS WILL BE "1"s FOR EXAMPLE IF LOWER WORD DATA BIT $\phi\phi$ IS IN ERROR, SYNDROME 3, SYNDROM 4, & SYNDROME 5 FAIL GIVING A $\phi\phi 111000$ SYNDROME ($\phi 7\phi_6$). IF LOWER WORD DATA BITS $\phi\phi$ & $\phi 1$ FAIL, SYNDROME ϕ & SYNDROME 5 FAIL GIVING A $\phi\phi 10001$ SYNDROME, SINCE IN SYNDROME BITS 3 & 4 THEY CANCEL EACH OTHER OUT, ALL ϕ SYNDROME SIGNIFIES GOOD DATA

2 SYNDROMES ARE SHOWN IN OCTAL

(ECC LOGIC)

(SLOT 18)

TITLE		SIZE		CODE	NUMBER		REV.
MEMORY DATA BOARD		D	CS	M8212-Ø-1		C	
SCALE	SHEET 18 OF 19		DIST.				

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NOTE
THE SIGNAL NAMES, FOR SIGNALS THAT LEAVE THE MODULE THAT APPEAR IN THIS SCHEMATIC, MATCH THE SIGNAL NAMES USED THROUGHOUT THE M5780 AND ARE LISTED IN THE TABLE UNDER THE M8212 COLUMN. THE SAME INPUT-OUTPUT PINS ON THE MODULE HAVE DIFFERENT NAMES WHEN THE MODULE IS USED WITH THE MA780. THESE NAMES ARE LISTED IN THE M8212-YA COLUMN.

SIGNAL NAME

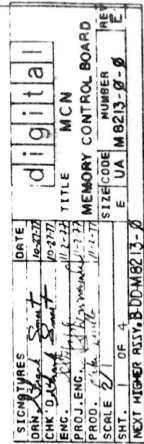
PIN M8212-YA	M8212	PIN M8212-YA	M8212
DS1 BUS ADMI B29 H	BUS CMD ARY H	DB2 MATR INIT H	MCNB INIT H
AA1 BUS ADMI B00 H	BUS FL INF 00 H	DF2 MATJ MSK CLR L	MCNB MSK CLR L
AB2 BUS ADMI B01 H	BUS FL INF 01 H	EL1 MATJ RD EN H	MCNB RD EN H
AD2 BUS ADMI B02 H	BUS FL INF 02 H	DJ1 MATJ GEN ECC L	MCNB READ H
AE2 BUS ADMI B03 H	BUS FL INF 03 H	DF1 MATJ TAG CLK L	MCNB TAG CLK L
AF2 BUS ADMI B04 H	BUS FL INF 04 H	DE2 MATJ UNCORR ERR CLK L	MCNB UNCORR ERR CLK L
AJ2 BUS ADMI B05 H	BUS FL INF 05 H	EA1 MATJ XMT DAT CK H	MCNB XMT DAT CK H
AK2 BUS ADMI B06 H	BUS FL INF 06 H	EMI MATF CRD INH L	MCNE CRD INH L
AL2 BUS ADMI B07 H	BUS FL INF 07 H	FS1 MATE DIAG EN L	MCNE DIAG EN L
AM2 BUS ADMI B08 H	BUS FL INF 08 H	FRI MATD FRC CHK 0 H	MCNL FRC CHK 0 H
AN2 BUS ADMI B09 H	BUS FL INF 09 H	FPI MATD FRC CHK 1 H	MCNL FRC CHK 1 H
AV2 BUS ADMI B10 H	BUS FL INF 10 H	FNI MATD FRC CHK 2 H	MCNL FRC CHK 2 H
BA1 BUS ADMI B11 H	BUS FL INF 11 H	FMI MATD FRC CHK 3 H	MCNL FRC CHK 3 H
BB2 BUS ADMI B12 H	BUS FL INF 12 H	FL1 MATD FRC CHK 4 H	MCNL FRC CHK 4 H
BD2 BUS ADMI B13 H	BUS FL INF 13 H	FK2 MATD FRC CHK 5 H	MCNL FRC CHK 5 H
BE2 BUS ADMI B14 H	BUS FL INF 14 H	FK1 MATD FRC CHK 6 H	MCNL FRC CHK 6 H
BK2 BUS ADMI B15 H	BUS FL INF 15 H	FJ1 MATD FRC CHK 7 H	MCNL FRC CHK 7 H
BM2 BUS ADMI B16 H	BUS FL INF 16 H	FD1 MDTA SYN 2 H	MDTC SYN 2 H
BR2 BUS ADMI B17 H	BUS FL INF 17 H	FJ2	MDTE FULL WR EN H
BR2 BUS ADMI B18 H	BUS FL INF 18 H	CMI MATH ADR ON BUS L	MSSH ADR 0 BUS L
BS1 BUS ADMI B19 H	BUS FL INF 19 H	CLI MATH DAT ON BUS L	MSBH DAT 0 BUS L
BV2 BUS ADMI B20 H	BUS FL INF 20 H	DRI BUS ADMI EXT H	MSBJ FL EXT H
CA1 BUS ADMI B21 H	BUS FL INF 21 H	DF1 BUS ADMI B29 H	MSBJ FL WR H
CB2 BUS ADMI B22 H	BUS FL INF 22 H		
CE2 BUS ADMI B23 H	BUS FL INF 23 H		
CF2 BUS ADMI B24 H	BUS FL INF 24 H		
CH2 BUS ADMI B25 H	BUS FL INF 25 H		
CJ2 BUS ADMI B26 H	BUS FL INF 26 H		
CK2 BUS ADMI B27 H	BUS FL INF 27 H		
CL2 BUS ADMI B28 H	BUS FL INF 28 H		
CM2 BUS ADMI B29 H	BUS FL INF 29 H		
CR1 BUS ADMI B30 H	BUS FL INF 30 H		
CR2 BUS ADMI B31 H	BUS FL INF 31 H		
DM2 BUS ADMI MSK 0 H	BUS FL MSK 0 H		
DL1 BUS ADMI MSK 1 H	BUS FL MSK 1 H		
DK2 BUS ADMI MSK 2 H	BUS FL MSK 2 H		
DL2 BUS ADMI MSK 3 H	BUS FL MSK 3 H		
DNI BUS ADMI PI H	BUS X FAR 1 H		
DUI MATKARY RD EN H	MCNA ARY RD EN H		
EB1 MATJ CYC CLR L	MCNA CLR L		
FUI MATJ ECC EN H	MCNA ECC EN H		
ED2 MATK RD DAT EN L	MCNA RD DAT EN L		
EC1 MATK RD LO SEL L	MCNA RD LO SEL L		
EJ1 MATJ WR EN LO L	MCNA WR EN LO H		
EF1 MATJ WR EN UP H	MCNA WR EN UP H		
DMI MATJ ARY DAT CK H	MCNB ARY DAT CK H		
DD2 MATJ CHK BIT DAT CK H	MCNB CHK BIT DAT CK H		
DD2 MATJ CHK BIT DAT CK H	MCNB CHK DAT CK H		

CONTINUE

SIGNAL NAME CONVERSION TABLE FOR M8212 YA

REVISION HISTORY			DOCUMENT NUMBER	
DATE	ECO NUMBER	REV.	SIZE CODE	NUMBER
			DCS	M8212-0-1
			SCALE	SHEET 9 OF 19

8 7 6 5 4 3 2 1 TW



ETCH REV. C-PI
P.L.C. DESIGN DATA BASE REV. C

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B			
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[illegible]

5
SIDE AND FASTENED
DOED TAPE.
SIDE, CATHODE END
SECOND PTH BELOW E5-8.
H BELOW E5-8 TO
2

6 / DL8 ARE MOUNTED
BOARD WITH DOUBLE
IS ALSO MOUNTED ON
RESISTOR.
WIRE FROM E19-3 TO
BETWEEN SECOND P
ON E19-3

NOT
1-2:0
1-3:0
1-4:0
1-5:0

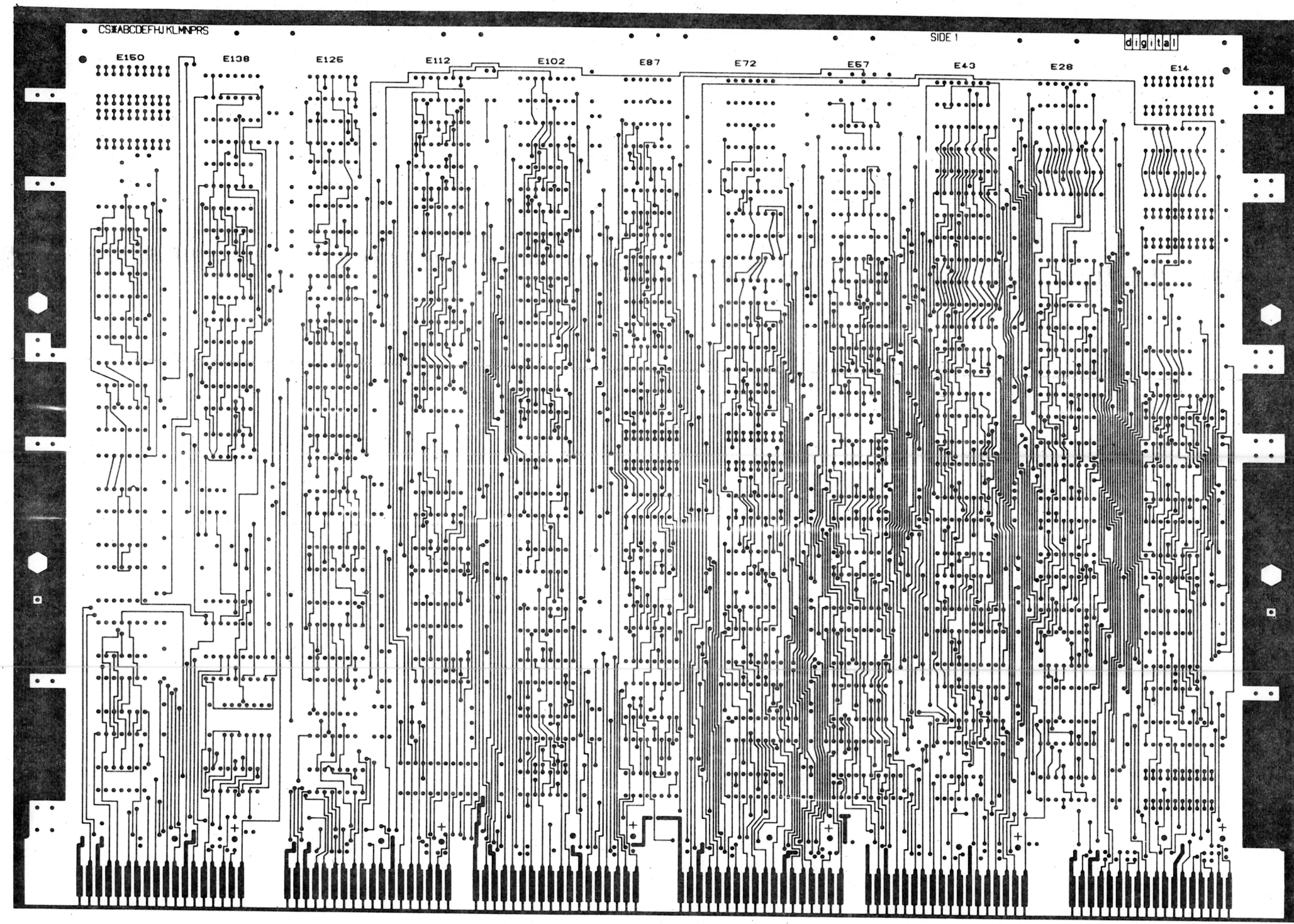
M 8213-0-0 E

1

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5012452C-P1 M8213

LAYER 1



CHK	CHANGE NO.	REV.

TITLE	M. C. N.	DESIGN	NUMBER	REV.
SCALE	2-1	SHEET	2 OF 4	E
DIST.				

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RAYA P

L4

MEMORY CONTROL BOARD 5012452C-P1
M8213 SIDE 2

1-5

4-1

REV.	CHANGE NO.	REV.

TITLE	M. C. N.	SIZE CODE	EUA	NUMBER	M8213-0-0	REV.	E
SCALE	2-1	SHEET	3	OF	4	DATE	

TN 1

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REWORK INSTRUCTIONS
ECO #3
COMPONENT DELETES SIDE 1:
3-1. E61 (P/N 1910537-00)
COMPONENT ADDS SIDE 1:
3-2. E61 (P/N 1910536-00)
3-3. P/N 23162F1-00 AT E12
3-4. P/N 23161F1-00 AT E12
3-5. P/N 23162F1-00 AT E27
3-6. P/N 23163F1-00 AT E26
3-7. P/N 23164F1-00 AT E42
3-8. P/N 23165F1-00 AT E41
3-9. P/N 23166F1-00 AT E35
3-10. P/N 23167F1-00 AT E38

REWORK INSTRUCTIONS
ECO #4
ETCH CUT SIDE 2:
4-1 CUT ETCH AT E105-1
WIRE ADDS SIDE 1:
4-2 E146-13 TO E146-12
4-3 E146-12 TO DL4-5
4-4 E146-11 TO E118-5
4-5 E118-12 TO E105-1
4-6 E118-6 TO E118-13

REMOVE IC SOCKETS (P/N 12-11666-00)
AT: E12; E13; E26; E27; E38; E39; E41; E42
ADD IC SOCKETS (P/N 12-15006-03)
AT: E12; E13; E26; E27; E38; E39; E41; E42

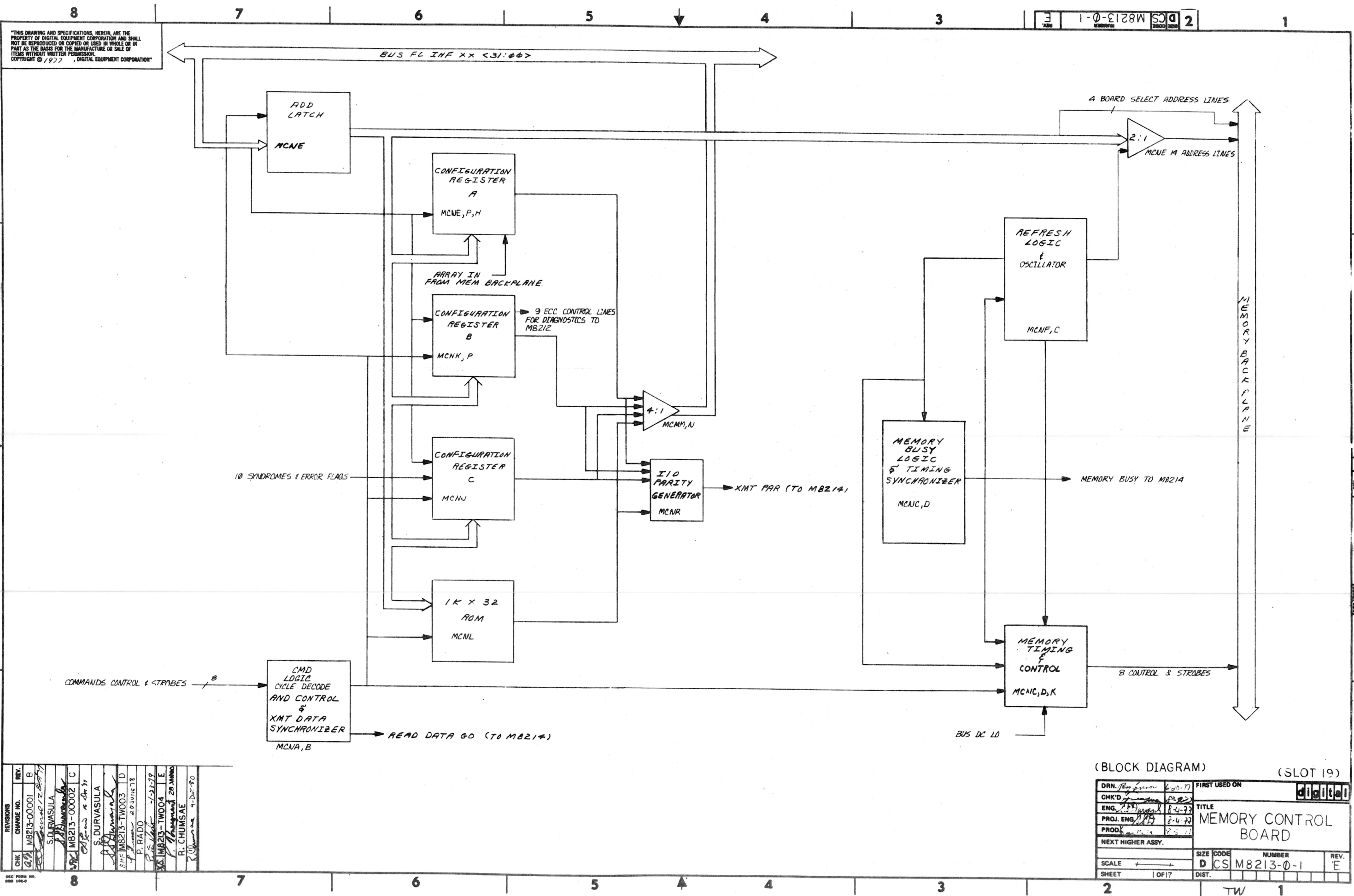
DATE: 11/1/77
DRAWN BY: J. J. J.
CHECKED BY: J. J. J.
APPROVED BY: J. J. J.

TITLE: M.C.N.
CODE: E JA M8213-0-0
REV: E
SCALE: 1/16" = 1" (SHEET 4 OF 4)
TWO 1

LINE ITEM	DOCUMENT NUMBER	PART NUMBER	DESCRIPTION	QTY PER VARIATION 00	REFERENCE DESIGNATOR
1	1	E-MD-5012452-0-0	5012452-00 M8213	1	
2	2		1000011-00 47.0 MMF 100V 5%200PPM MICA	1	C1
3	3		1000024-00 470.0 MMF 100V 5%200PPM MICA	1	C2
4	4		1001610-01 .01 MFD50/100V +80-20% DISC	1	C3
5	5		1011605-00 100 MFD 10V 10% S.TANT	3	C4,C100,C101
6	6		1001739-00 27.0 MMF 100V 5%200PPM MICA	2	C74,C75
7	7		1012784-00 .047 MFD 50V +80-20% CER	41	C5-C45
8	8		1012084-01 8 MFD 25V +75-10% AL EL	6	C62-C67
9	9		1110324-00 LED 1MCD@10MA PIV=3	1	D1
10	10		1300365-00 1.0 K .25 W 5.0 % CC	62	R1-R5,R11,R14,R22-R24,R27-R49, CONT R51,R54,R57,R61-R64,R98-R107, CONT R500,R509,R510,R519,R502-R507, CONT R56,R512
11	11		1300247-00 120.0 .25 W 5.0 % CC	6	R8,R13,R17,R19,R21,R515
12	12		1300295-00 330.0 .25 W 5.0 % CC	1	R516
13	13		1300309-00 390.0 .25 W 5.0 % CC	2	R513,R518
14	14		1301890-00 560.0 .25 W 5.0 % CC	1	R97
15	15		1302645-00 1.10 K .25 W 1.0 % RN55D-F10	1	R25
16	16		1300391-00 1.50 K .25 W 5.0 % CC	1	R517
17	17		1302465-00 18.0 K .25 W 5.0 % CC	1	R6
18	18		1309412-00 18.20 K .25 W 1.0 % RN55D-F10	1	R26
19	19		1302388-00 2.0 K .25 W 5.0 % CC	2	R52,R53
20	20		1611243-00 DELAY=25-250NS,10TAPS RCL#L-183	5	DL1-DL5
21	21		1605528-00 DELAY= 30NS,0TAPS DL5184	2	DL6,DL8
22	22		1611532-00 DELAY= 13NS,100 OHM IMP	1	DL9
23	23		1910532-00 74S00 NAND GATE-QUAD 2IN	3	E28,E83,E110
24	24		1912799-00 LS00 NAND-GATE-QUAD 2IN,P	1	E141
25	25		1912388-00 74S02 NOR GATE-QUAD 2IN,PO	3	E51,E120,E131
26	26		1912801-00 LS02 NOR-GATE-QUAD 2IN	1	E139
27	27		1910533-00 74S03 NAND GATE-QUAD 2IN,D	2	E57,E91

REVISION HISTORY			BASIC PART NO: M8213		DRN: F.SMART		DATE: 09-JUN-78		D I G I T A L			
ENG	ECO NUMBER	REV	SECTION A OF A		CHK'D: F.SMART		DATE: 09-JUN-78		TITLE PARTS LIST			
---	INIT	D	SECTION VARIATION INDEX		CHK'D: F.SMART		DATE: 09-JUN-78		MEMORY CONTROL BOARD			
R.C	M8213-TW004	E	[A] 00									
			[B]		DES.ENG: S.DURUASULA		DATE:					
			[C]									
			[D]		RESP.ENG.: S.DURUASULA		DATE:		DOCUMENT NUMBER			
			[E]									
			[F]									
			[G]									
			[H]									
			[I]		MFG.ENG.: M.TERELLA		DATE: 09-JUN-78		SIZE CODE NUMBER REV			
			[J]									
			[K]									
			[L]									
			[M]		ASSEMBLY NUMBER:		TOP DOCUMENT NUMBER:		FILE NAME:		EDIT #	
			[N]		E-UA-M8213-0-0		B-DD-M8213-0-0		Z0250.PLS		13	

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(BLOCK DIAGRAM) (SLOT 19)

DRN. <i>Pen. 6-20-77</i>	FIRST USED ON	digital
CHK'D <i>Pen. 6-20-77</i>	TITLE	MEMORY CONTROL BOARD
ENG. <i>Pen. 6-20-77</i>	PROJ. ENG. <i>Pen. 6-20-77</i>	PROD. <i>Pen. 6-20-77</i>
NEXT HIGHER ASSY.		
SCALE <i>+</i>	SIZE CODE	NUMBER
SHEET 1 OF 17	DIST.	REV. 'E'

CS M8213-0-1

TW 1

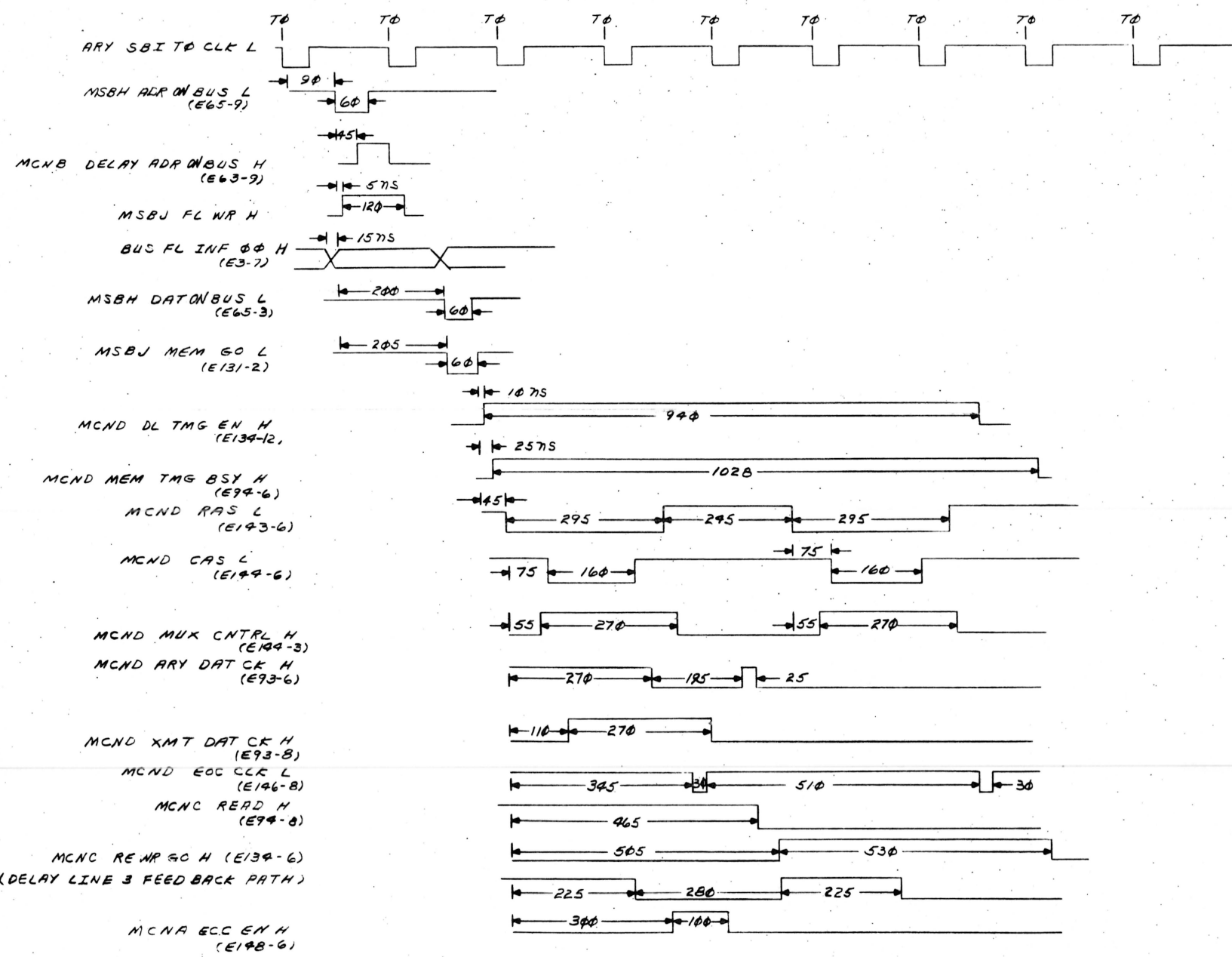
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REV. E
NUMBER 1
SIZE CODE DCS M8213-0-1
2

NOTES:

⚠ THIS TIMING POINT IS SHOWN TO ALLOW SYSTEM TEST PEOPLE TO UNCOVER DELAY LINE OSCILLATION PROBLEMS QUICKLY DUE TO MISWIRING OR SOLDER SHORTS.

⚠ THIS TIMING CAN BE OBSERVED BY FORCING THE CONSOLE TO LOOP ON A DEPOSIT TO A MEMORY ARRAY ADDRESS.



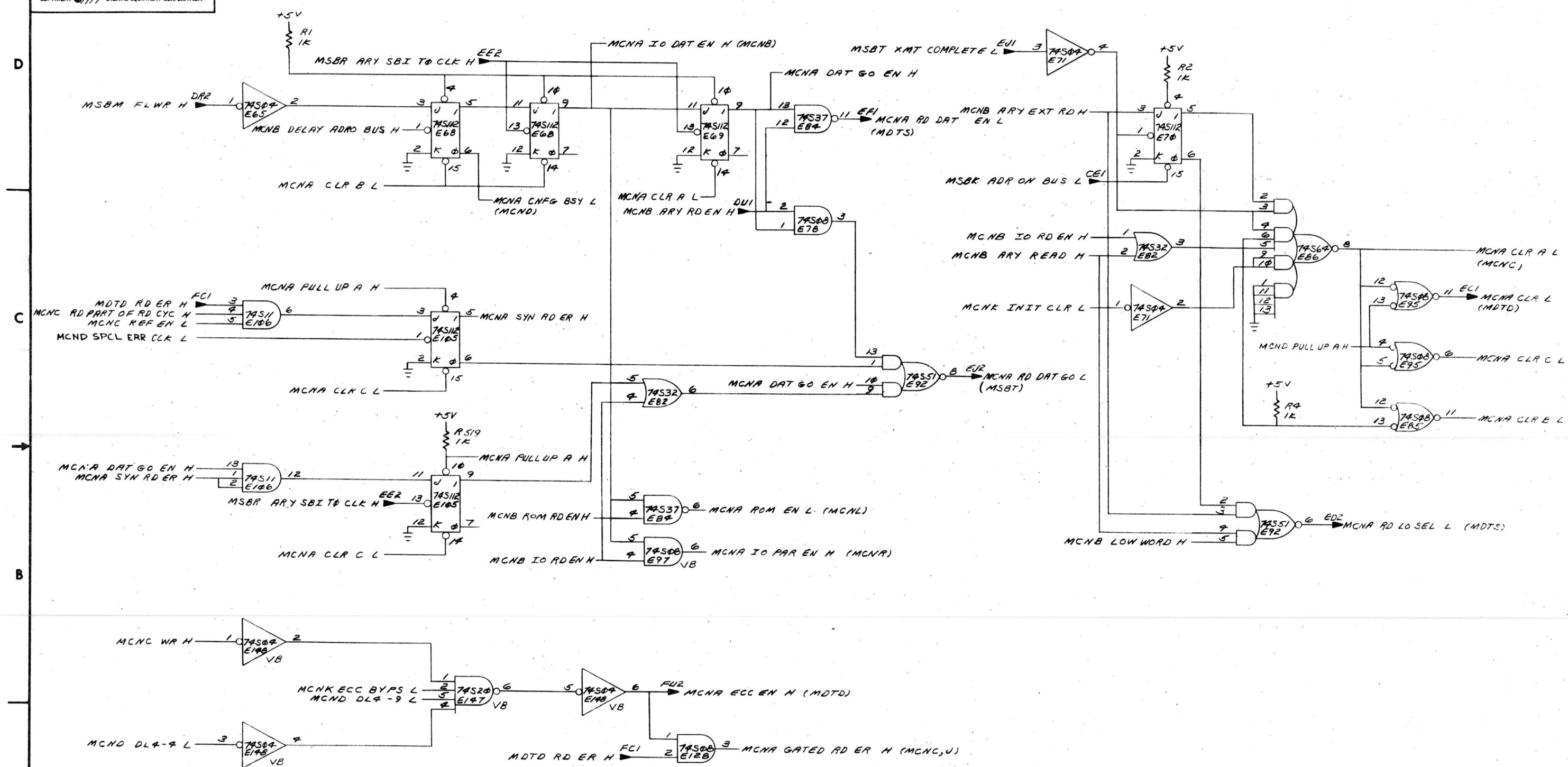
⚠ E135-10 (DELAY LINE 3 FEED BACK PATH)

REVISIONS		
CHK	CHANGE NO.	REV.

(INTERNAL TIMING FOR WRITE MASK CYCLE ⚠)

TITLE MEMORY CONTROL BOARD		SIZE CODE DCS	NUMBER M8213-0-1	REV. E
SCALE	SHEET 3 OF 17	DIST.	TW	

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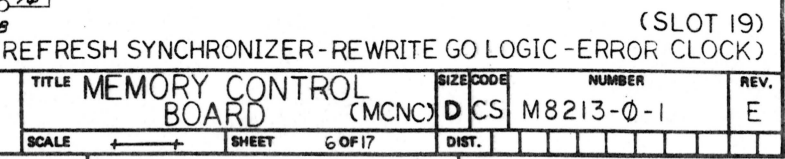
REVISIONS		
CHK	CHANGE NO.	REV.

(SLOT 19)
(READ DATA SYNCHRONIZER-DATA MUX SELECT-ECC ENABLE LOGIC)

TITLE		MEMORY CONTROL BOARD (MCNA)		SIZE	CODE	NUMBER		REV.
				D	CS	M8213-0-1		E
SCALE	+	SHEET	4 OF 17	DIST.				



TITLE	MEMORY CONTROL BOARD (MCNB)				SIZE	CODE	NUMBER				REV.
					D	CS	M8213-0-1				E
SCALE	1" = 1"		SHEET	5 OF 17	DIST.						

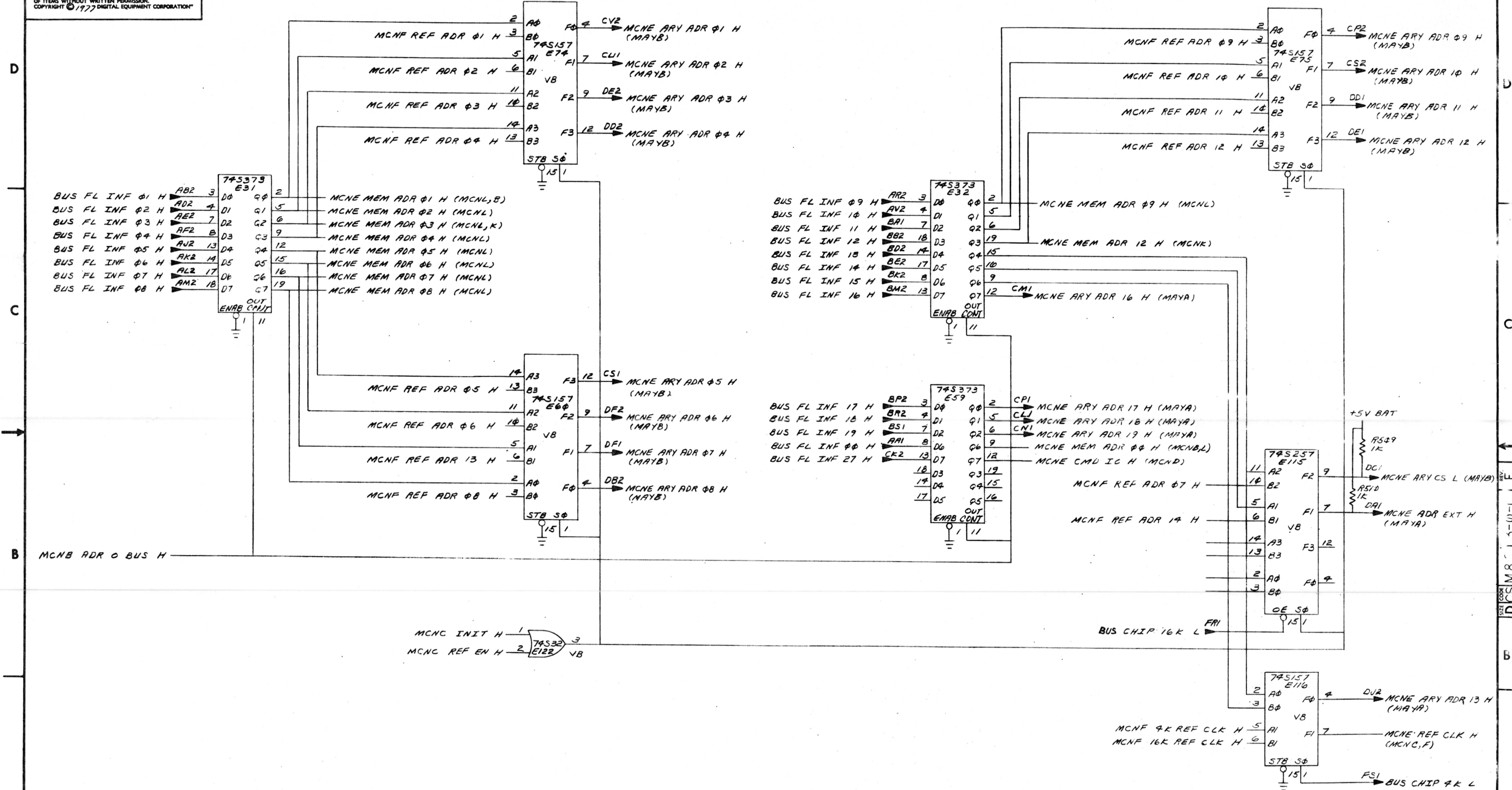


A



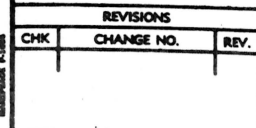
TITLE	MEMORY CONTROL BOARD (MCND)		SIZE	CODE	NUMBER	REV.
SCALE	1:1	SHEET	7 OF 17	D	CS	M8213-0-1
						E

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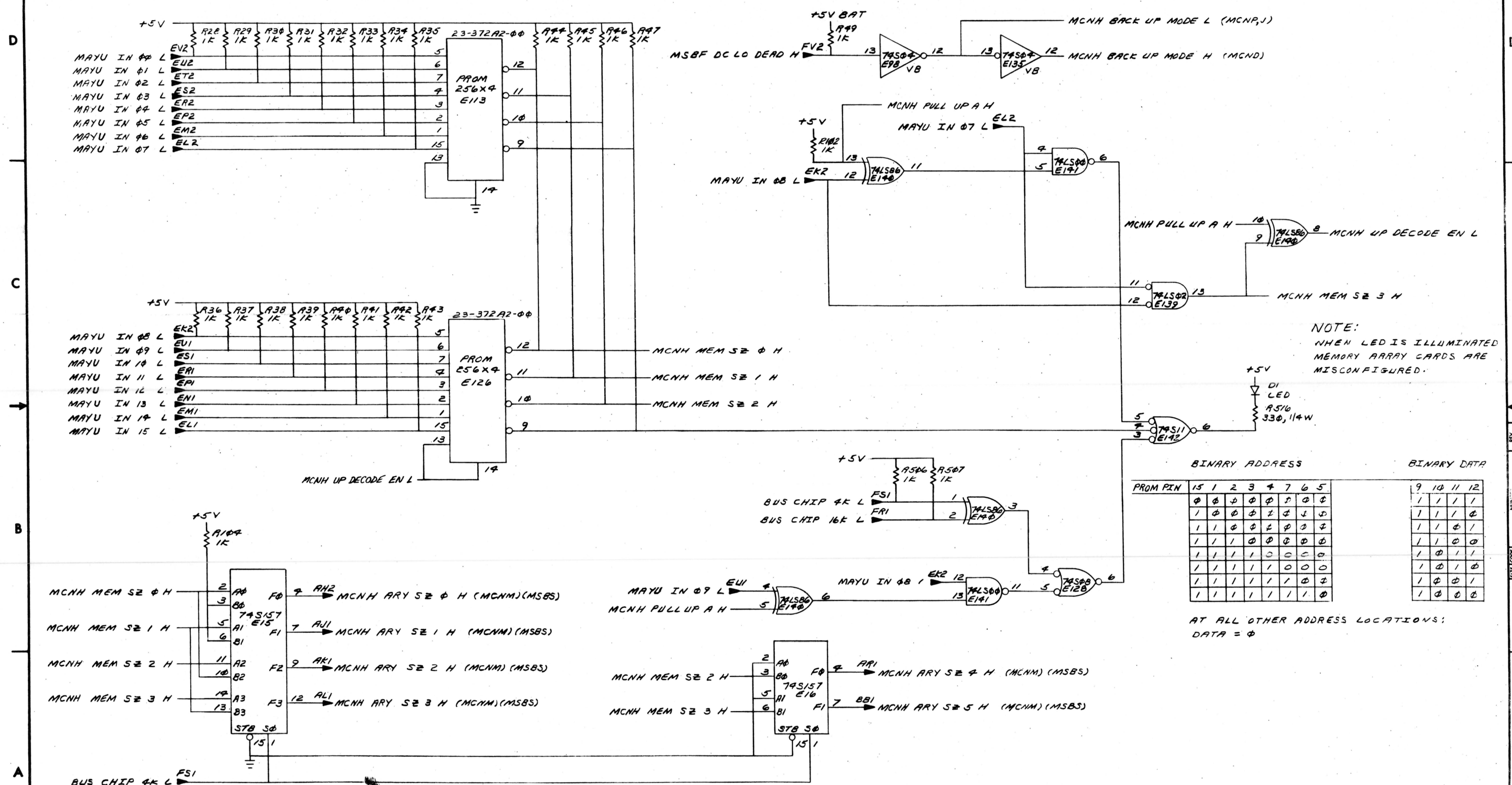
(ADDRESS REGISTERS & MULTIPLEXER) (SLOT 19)

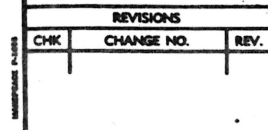
TITLE	SIZE CODE	NUMBER	REV.
MEMORY CONTROL BOARD (MCNE)	DCS M8213-0-1	E	
SCALE	SHEET	8 OF 17	DIST.




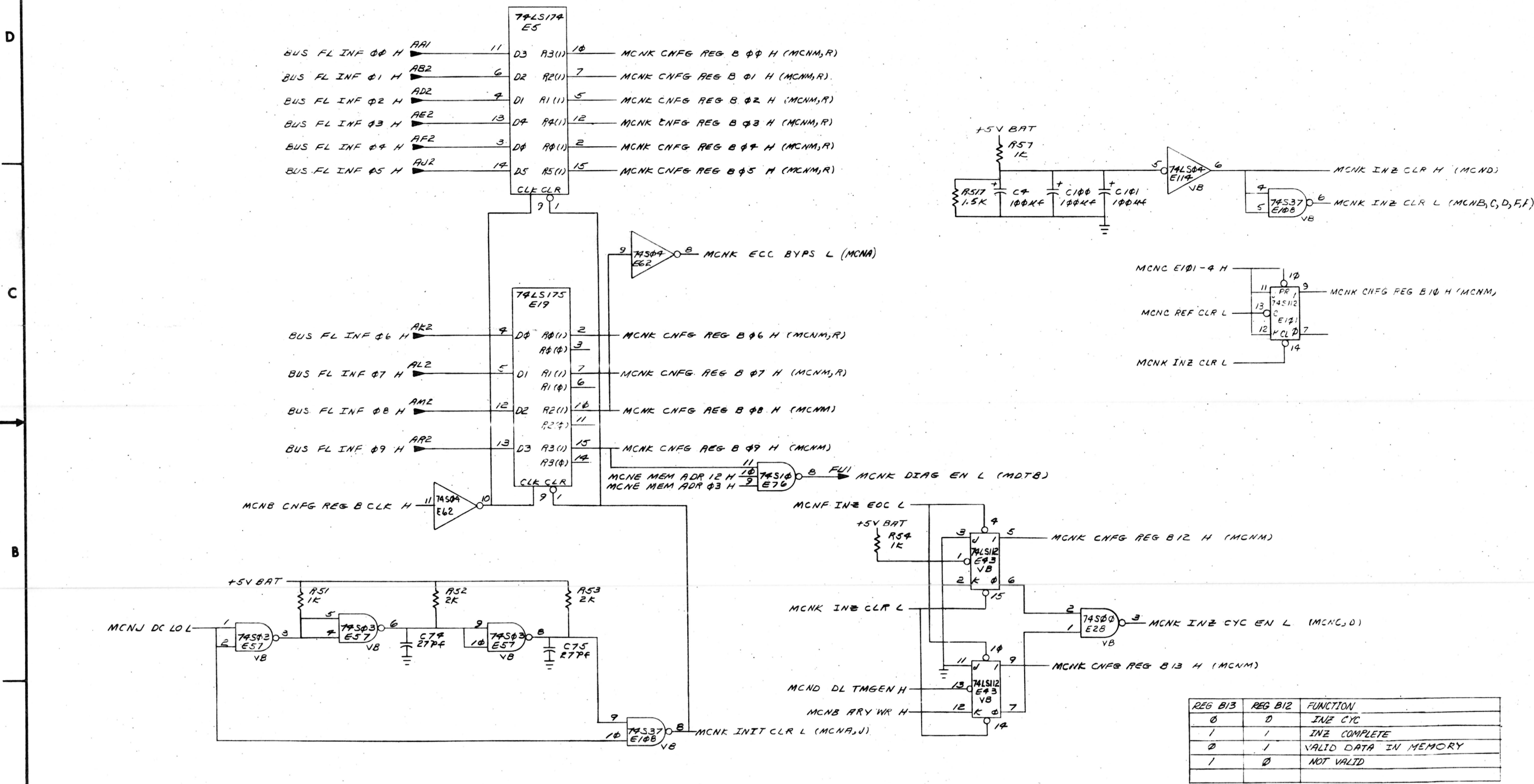
TITLE	MEMORY CONTROL BOARD (MCNF)		SIZE	CODE	NUMBER	REV.
			D	CS	M8213-0-1	E
SCALE	+	+	SHEET	9 OF 17		DIST.

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(CONFIGURATION C REGISTERS)										(SLOT 19)													
TITLE MEMORY CONTROL BOARD (MCNJ)															SIZE CODE DCS		NUMBER M8213-0-1					REV. E	
SCALE 					SHEET 11 OF 17					DIST.													
2										TW 1													



REG B13	REG B12	FUNCTION
0	0	INZ CYC
1	1	INZ COMPLETE
0	1	VALID DATA IN MEMORY
1	0	NOT VALID

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C

B

A

REVISIONS		
CHK	CHANGE NO.	REV.

[illegible]

(ROM BOOTSTRAP)

(SLOT 19)

TITLE	MEMORY CONTROL BOARD (MCNL)
-------	-----------------------------

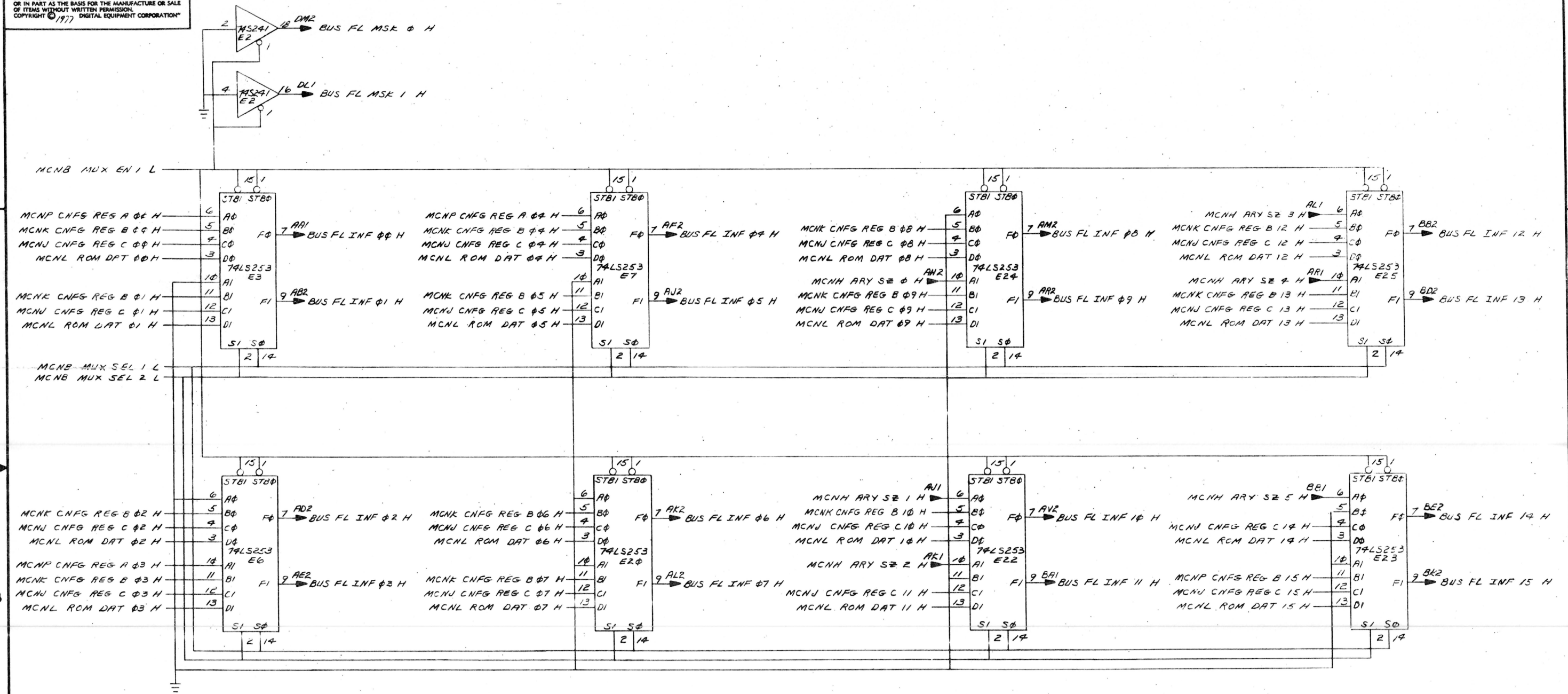
SIZE	CODE	NUMBER	REV.
D	CS	M8213-0-1	E

SCALE		SHEET	13 OF 17
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[illegible]

TW 1

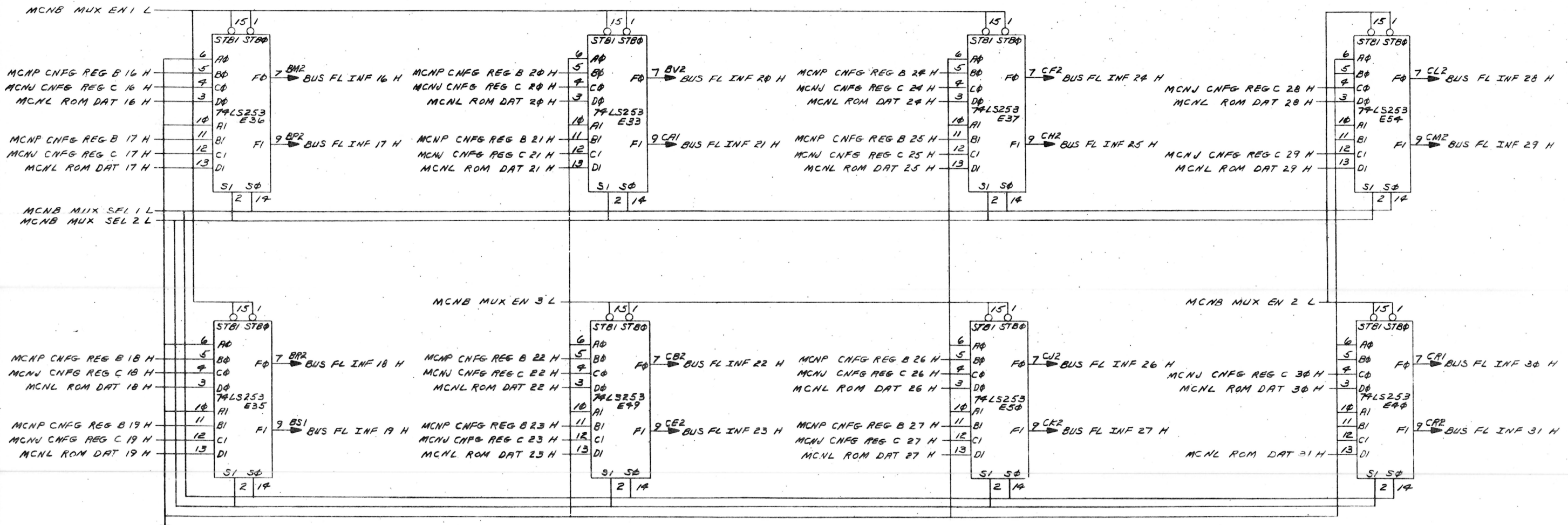
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74LS253 FUNCTION TABLE

SELECT INPUTS		DATA INPUTS				OUTPUT CONTROL	OUTPUT
B	A	C0	C1	C2	C3	G	Y
L	L	L/H	X	X	X	L	L/H
L	H	X	L/H	X	X	L	L/H
H	L	X	X	L/H	X	L	L/H
H	H	X	X	X	L/H	L	L/H

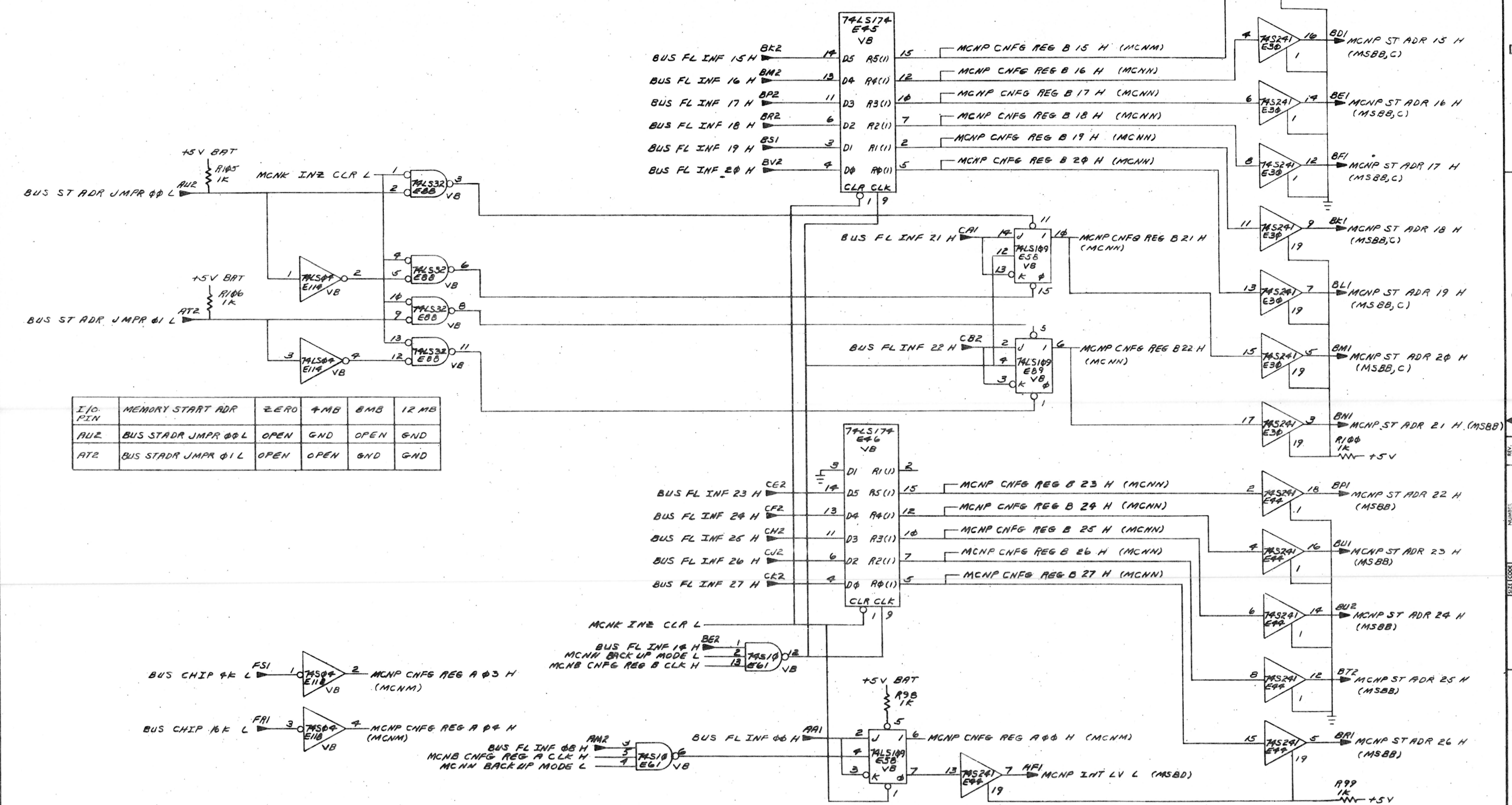
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REVISIONS		
CHK	CHANGE NO.	REV.

(I/O DATA MUX)		(SLOT 19)	
TITLE MEMORY CONTROL BOARD (MCNN)		SIZE CODE DCS	NUMBER M8213-0-1
SCALE	SHEET 15 OF 17	DIST.	REV. E

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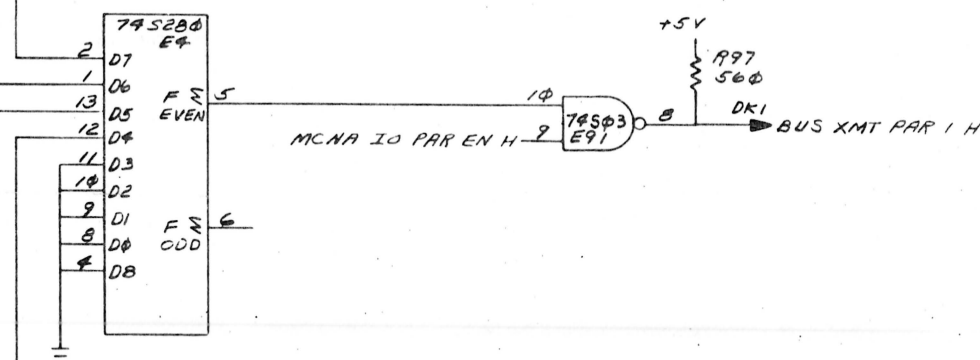
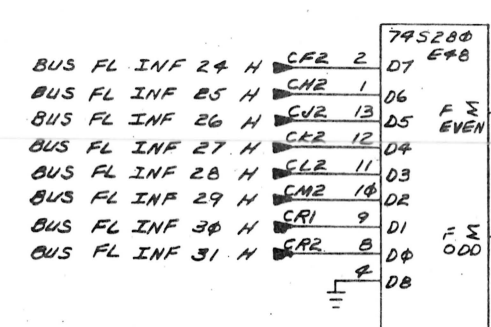
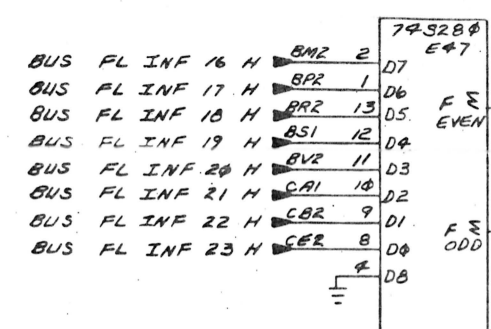
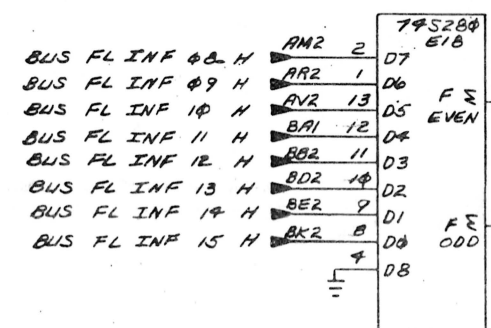
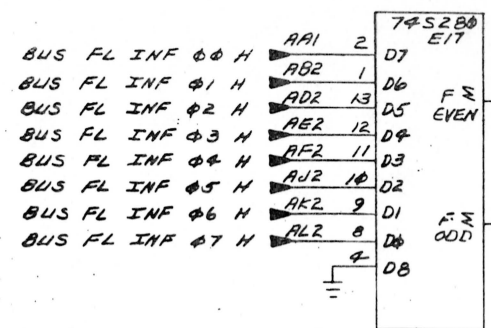
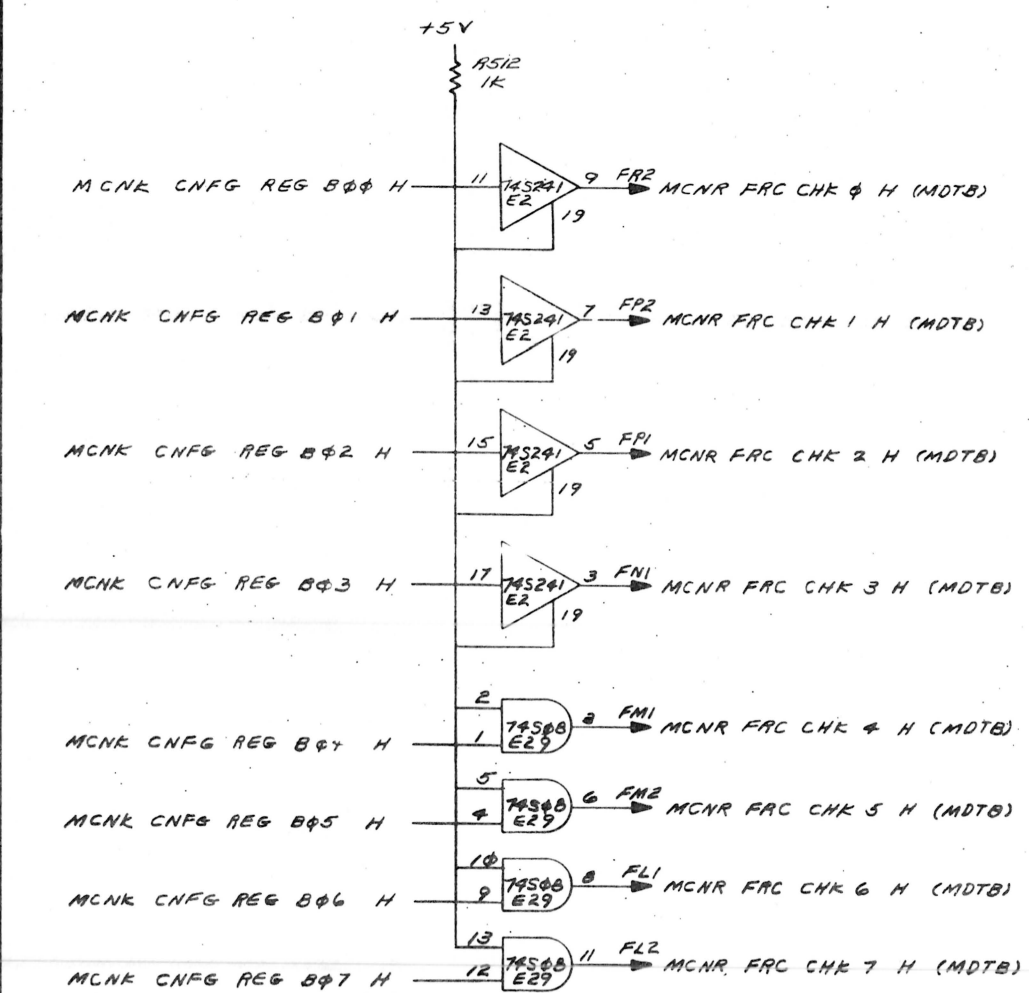


REVISIONS		
CHK	CHANGE NO.	REV.

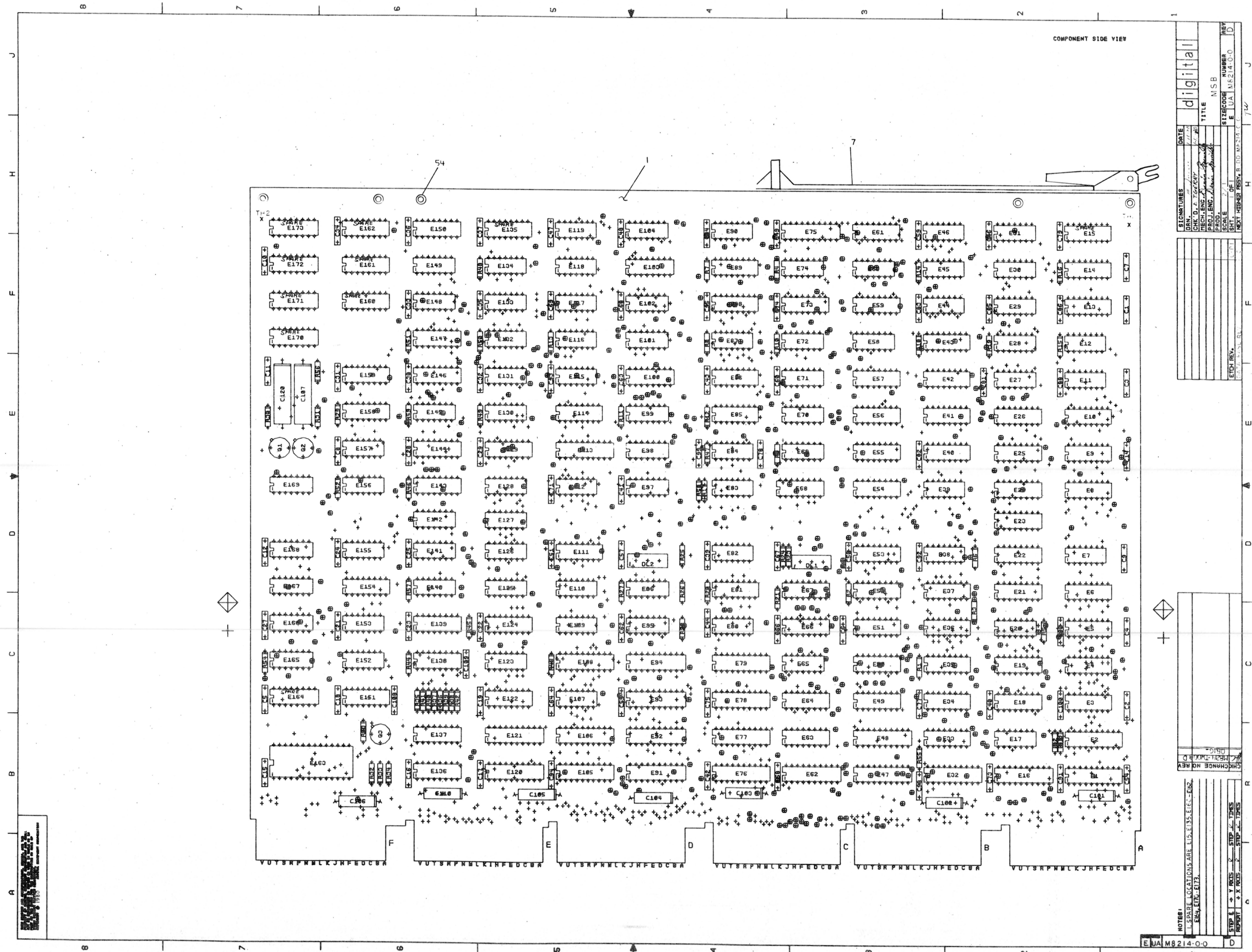
(I/O DATA PARITY)		(SLOT 19)	
TITLE MEMORY CONTROL BOARD (MCNP)		SIZE CODE DCS	NUMBER M8213-0-1
SCALE	SHEET 16 OF 17	DIST.	REV. E

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D
C
B
A



REVISIONS		
CHK	CHANGE NO.	REV.



LINE	ITEM	DOCUMENT NUMBER	PART NUMBER	DESCRIPTION	QTY PER VARIATION	REFERENCE DESIGNATOR
1	1	D-MD-5012451-0-0	5012451-00	M8214	1	
2	2		1011605-00	100 MFD 10V 10% S.TANT	2	C107,C120
3	3		1012784-00	.047 MFD 50V +80-20% CER	84	C1-C12,C14-C19,C27-C37,C39-C44, C46-C51,C54,C55,C57-C60,C66-C69, C71,C73-C75,C108,C109,C99, C21-C25,C62-C64,C100,C77-C79, C81-C86,C88,C90-C95,C98
4	4	BLANK			0	
5	5		1012084-01	8 MFD 25V +75-10% AL EL	7	C110,C101-C106
6	6		1103041-00	DEC 777 QS=12PCB PIV= 8VS	2	D1,D2
7	7		1216988-02	HANDLE,MODULE,HEX TWO EJECTORS	1	
8	8		1300309-00	390.0 .25 W 5.0 % CC	2	R23,R26
9	9		1300365-00	1.0 K .25 W 5.0 % CC	44	R1-R21,R24,R25,R27-R31,R43-R55, R57-R59
10	10		1300391-00	1.50 K .25 W 5.0 % CC	1	R56
11	11		1301972-00	270.0 .25 W 5.0 % CC	11	R32-R42
12	12		1511686-00	DEC5433 FET N 350MW 10 25 1A	3	Q1-Q3
13	13		1605528-00	DELAY= 30NS,0TAPS DL5184	1	DL2
14	14		1610080-01	DELAY= 15NS,0TAPS	1	DL1
15	15		1913730-00	DC 101 PRIORITY ARBITRATOR	1	E163
16	16		1912731-00	DEC 8646A TRANSCEIVER,48BIT BUS	14	E1,E2,E16,E32,E47,E62,E76,E48, E91,E92,E105,E106,E120,E121
17	17		1913493-00	74S241 OCTAL BUFFER,TRI-STA	2	E75,E113
18	18		1910542-00	74S64 A-0-I GATE 4-2-3-2	1	E142
19	19		1910532-00	74S00 NAND GATE-QUAD 2IN	7	E31,E83,E87,E99,E117,E134,E140
20	20		1910534-00	74S04 INVERTER GATE-HEX 1I	11	E11,E12,E17,E20,E30,E38,E96, E101,E126,E141,E145
21	21		1910536-00	74S10 NAND GATE-TRIPLE 3IN	4	E46,E74,E131,E169
22	22		1910537-00	74S11 AND GATE-TRIPLE 3INP	2	E39,E109
23	23		1910539-00	74S20 NAND GATE-DUAL 4INPU	2	E44,E116

REVISION HISTORY			BASIC PART NO: M8214		DRN: J.FITZGERALD		DATE: 05-JUN-78		D I G I T A L	
ENG	ECO NUMBER	REV	SECTION A OF A		CHK'D: F.SMART		DATE: 05-JUN-78		TITLE PARTS LIST	
J.S	00002	C	SECTION VARIATION INDEX		CHK'D:		DATE: 05-JUN-78		MEMORY SBI BOARD	
RC	TW003	D	[A] 00		DES.ENG: P.RADO		DATE: 05-JUN-78		DOCUMENT NUMBER	
			[B]		RESP.ENG.: P.RADO		DATE: 05-JUN-78		SIZE CODE NUMBER REV	
			[C]		MFG.ENG.: M.TERELLO		DATE: 05-JUN-78		K PL M8214-0-DBP D	
			[D]		ASSEMBLY NUMBER:		TOP DOCUMENT NUMBER:		FILE NAME: EDIT #	
			[E]		ID-UA-M8214-0-0		M8214		Z1282D,PLS 9	
			[F]							
			[G]							
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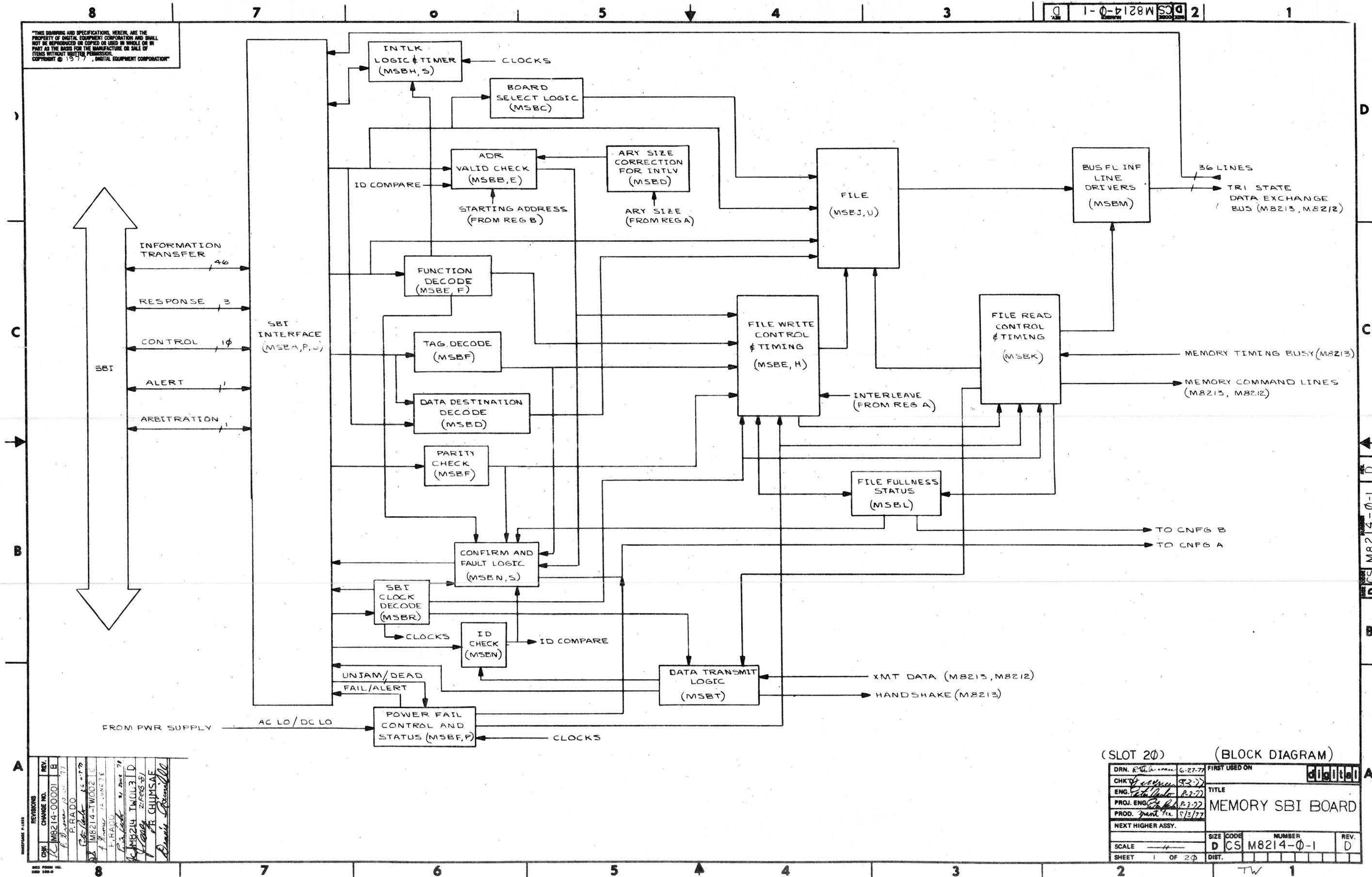
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LINE ITEM		DOCUMENT NUMBER	PART NUMBER	DESCRIPTION	QTY PER VARIATION 00	REFERENCE DESIGNATOR
24	24		1910545-00	74S112 FF-JK DUAL,EDGE TRIG	7	E13,E14,E68,E81,E146,E147,E154
25	25		1910546-00	74S140 NAND GATE-DUAL 4INPU	1	E82
26	26		1910550-00	74S174 FF-D HEX	2	E61,E150
27	27		1910650-00	74161 COUNTER,SYNCHR. UP	2	E158,E159
28	28		1910544-00	74S74 FF-D DUAL,EDGE TRIGG	10	E69,E70,E84,E95,E110,E123,E148,
29	29		1911398-00	10101 OR/NOR GATE,4-2IN	1	CONT E157,E165,E167
30	30		1911415-00	10125 ECL TO TTL TRNSLTR	3	E137
31	31		1911469-00	DEC 8640 RECEIVER,BUS,QUAD,U	1	E122,E138,E151
32	32		1911573-00	74S280 PARITY GEN/CHKR,9BIT	3	E127
33	33		1911641-00	SN 74S257 MUX,QUAD 2 TO 1	2	E60,E98,E112
34	34		1911675-00	74S138 DECODER/DEMUX 3-8 LIN	3	E23,E22
35	35		1911712-00	74S51 AND-OR GATE-INVERT D	3	E88,E89,E100
36	36		1911983-00	74S133 NAND GATE-POSITIVE 1	6	E7,E168,E80
37	37		1912089-00	74S85 CMPRTR-4BIT MAGNITUD	4	E59,E73,E86,E103,E124,E139
38	38		1912096-00	DEC 74S86 XOR GATE,QUAD 2IN	3	E43,E51,E53,E111
39	39		1912380-00	74S02 NOR GATE-QUAD 2IN,PO	5	E29,E65,E128
40	40		1912389-00	74S08 AND GATE-QUAD 2IN,PO	7	E28,E102,E115,E133,E153
41	41		1912656-00	LS670 REGISTER FILE,4X4,LO	13	E27,E90,E107,E149,E155,E156,E165
42	42		1912746-00	DEC 74S37 NAND GATE-QUAD 2IN	2	E8-E10,E24-E26,E40-E42,E54-E57
43	43		1912799-00	LS00 NAND-GATE-QUAD 2IN,P	1	E97,E118
44	44		1912801-00	LS02 NOR-GATE-QUAD 2IN	3	E58
45	45		1912810-00	LS20 NAND GATE-DUAL 4IN	1	E45,E71,E72
46	46		1912828-00	LS85 COMPARATOR,4BIT MAGN	7	E104
47	47		1913887-00	74S258 MUX 1 OF 2(QUAD)TRI	3	E35,E49,E52,E63,E66,E85,E67
48	48		1912865-00	LS283 ADDER-4BIT BINARY FU	5	E18,E19,E37
49	49		1913220-00	10216 RECEIVER,TRIPLE LINE	1	E21,E36,E50,E64,E114
50	50		1913294-00	93S16 COUNTER,SYNCH UP BIN	3	E136
51	51		1913340-00	74S32 OR GATE-QUAD 2IN	5	E129,E143,E144
52	52		1913670-00	74S373 LATCH 8BIT TRASP TR	6	E119,E125,E130,E152,E132
53	53		1912847-00	LS157 MUX 1 OF 2(QUAD)	6	E77-E79,E93,E94,E108
54	54		9000024-01	EYELET, ROLLED FLANGE, .121 OD X	12	E3-E6,E33,E34
55	55		9008864-00	TAPE, DOUBLE COATED, 3/8" WIDE X	A/R	
56	56	BLANK			0	

57 NOTE: E15,E135,E160-E162,E170-E173,E164 ARE SPARE I.C.'S

D	I	G	I	T	A	L	TITLE	SECTION A OF A	SIZE	CODE	DOCUMENT NUMBER	REV
							MEMOPY SBI BOARD		K	PL	M8214-0-DBP	D

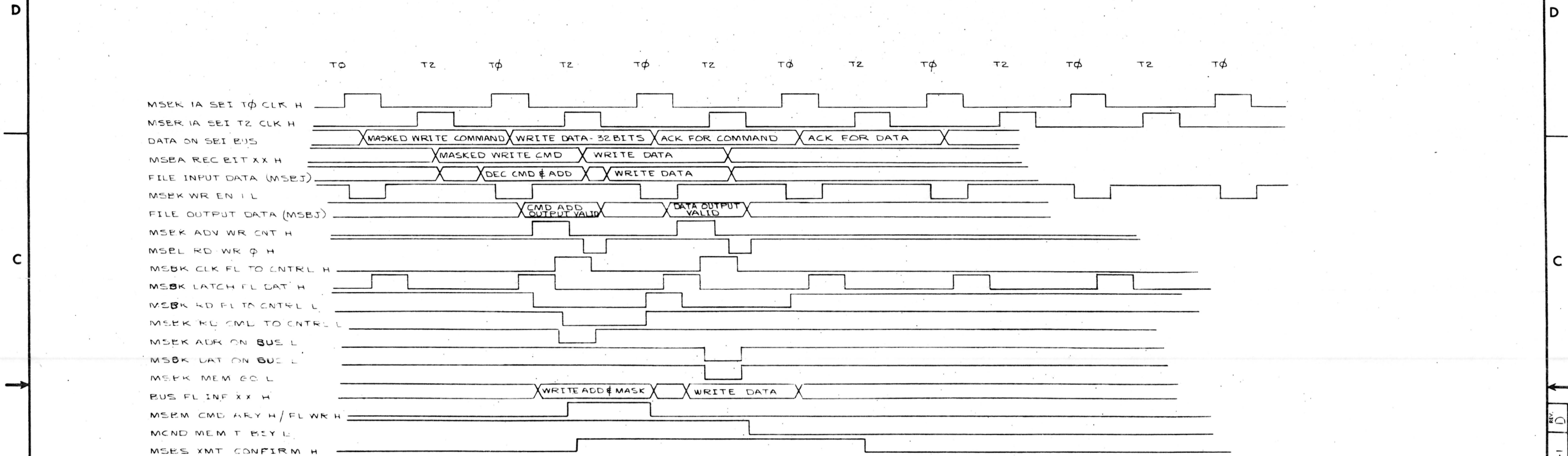
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REV.	CHG.	NO.	BY	DATE
1		1	PRADO	8-27-77
2		2	PRADO	9-1-77
3		3	PRADO	9-1-77
4		4	PRADO	9-1-77
5		5	PRADO	9-1-77
6		6	PRADO	9-1-77
7		7	PRADO	9-1-77
8		8	PRADO	9-1-77

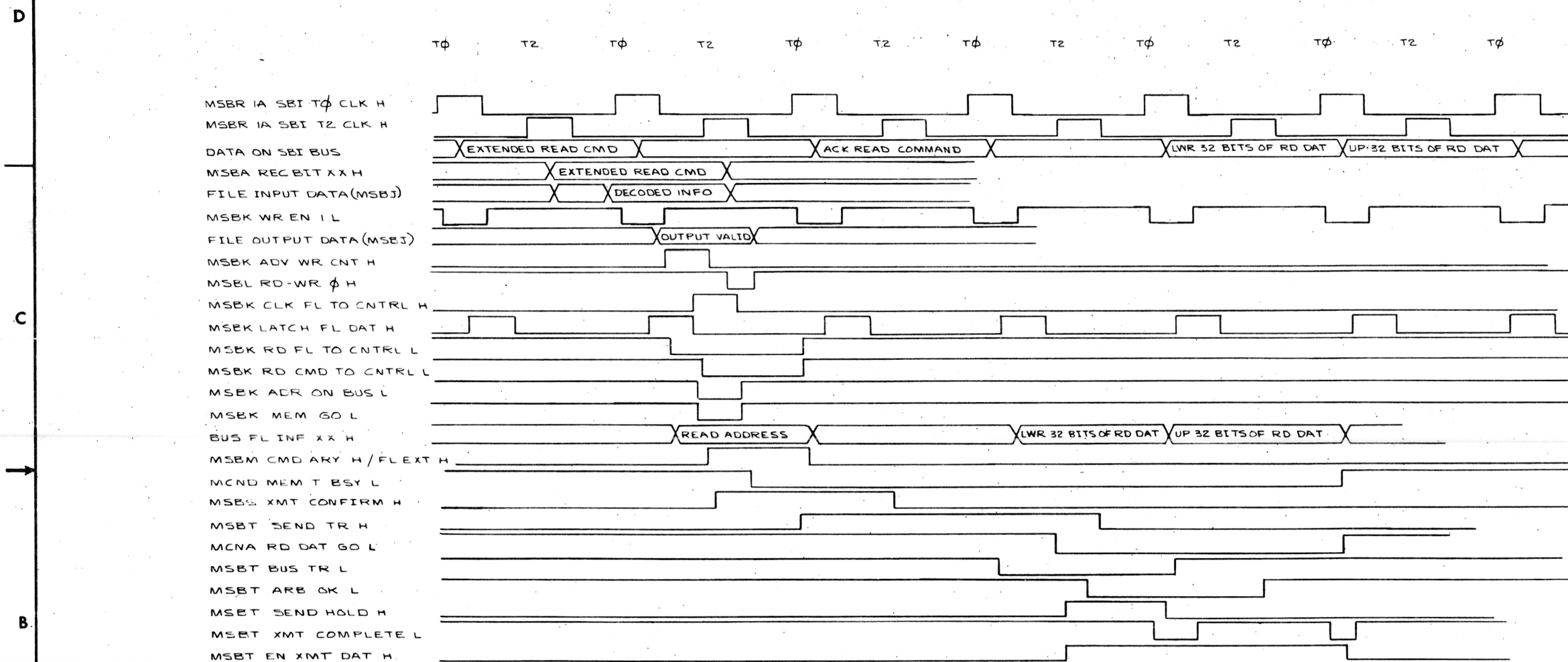
(SLOT 20)		(BLOCK DIAGRAM)	
DRN. R. 6-27-77	CHK'D. 9-2-77	FIRST USED ON	1000000
ENG. 9-2-77	PROJ. ENG. 9-2-77	TITLE	MEMORY SBI BOARD
PROD. 9-2-77	NEXT HIGHER ASSY.	SIZE CODE	D CS M8214-0-1
SCALE 1/4"	SHEET 1 OF 20	NUMBER	1
		REV.	D

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NOTE:
1. THE ABOVE TIMING SHOWS TYPICAL TIMING RELATIONSHIPS FOR A MASKED WRITE CYCLE WITH NO ECC ERROR. BY FORCING THE CONSOLE TO LOOP ON A MEMORY ADDRESS DEPOSIT, THE ABOVE TIMING WILL BE SEEN FOR A 200 ns BUS CYCLE.

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NOTE:

1. THE ABOVE TIMING SHOWS TYPICAL TIMING RELATIONSHIPS FOR AN EXTENDED READ CYCLE WITH NO ECC ERROR. BY FORCING THE CONSOLE TO LOOP ON A MEMORY ADDRESS EXAMINE AND SUPPRESSING TERMINAL PRINTOUT. THE ABOVE TIMING WILL BE SEEN FOR A 200 NS BUS CYCLE

BE SURE TO BYPASS THE CACHE (D/ID ID 18000)

REVISIONS		
CHK	CHANGE NO.	REV.

DEC FORM NO
002 122

8

7

6

5

4

3

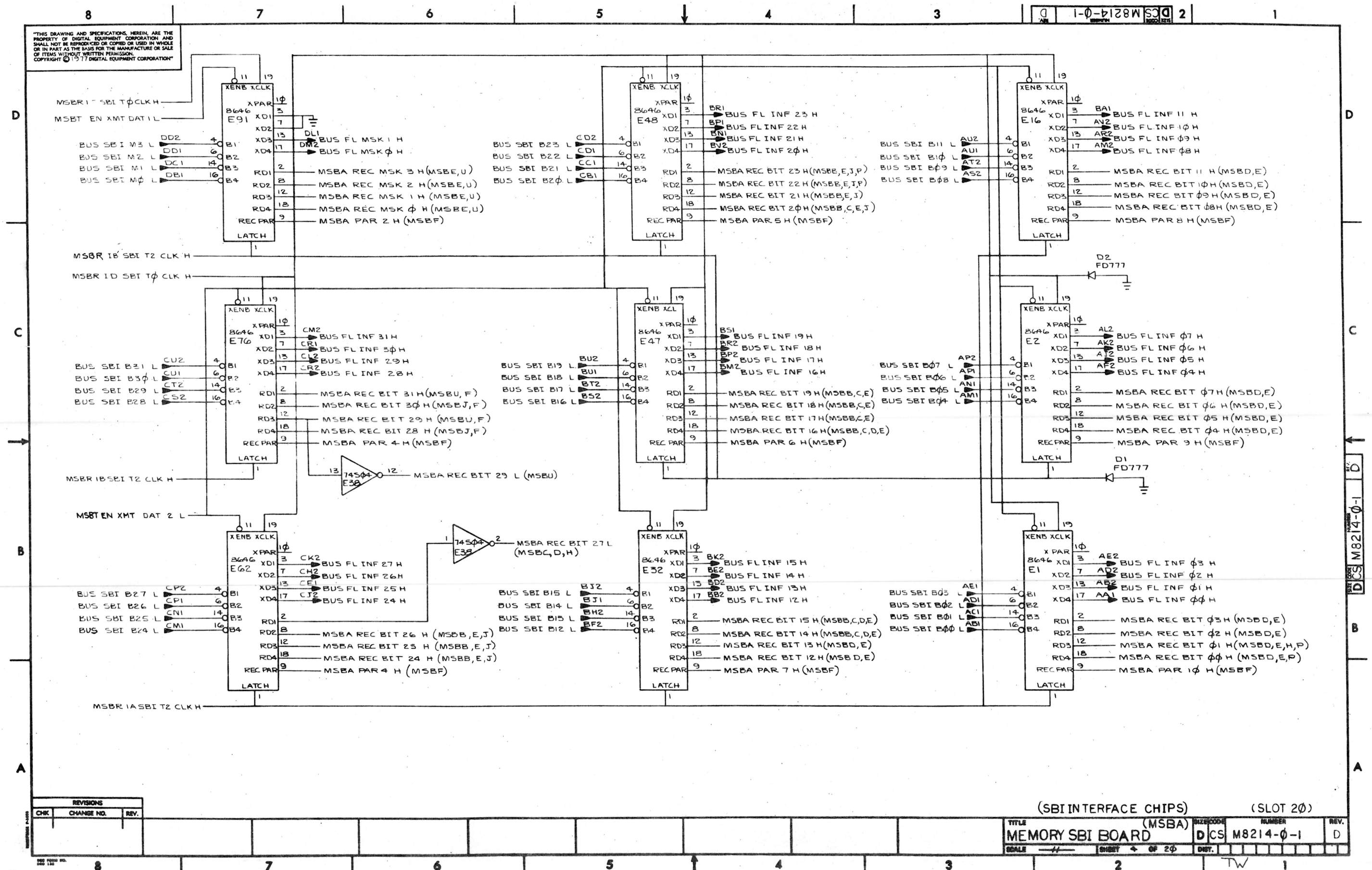
2

7

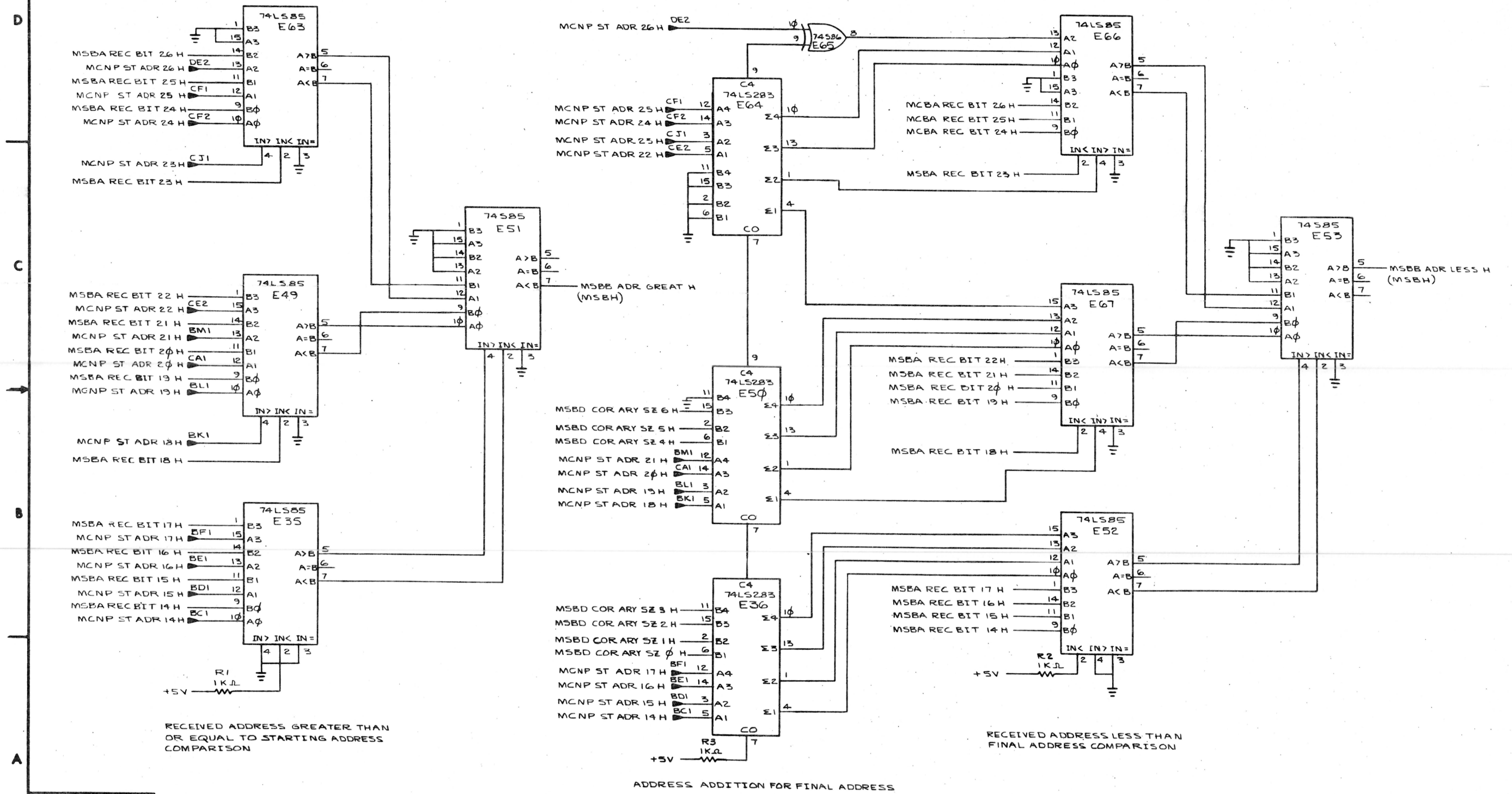
•

(MEMORY EXTENDED READ CYCLE TIMING)

TITLE		SIZE	CODE	NUMBER	REVISION
MEMORY SBI BOARD		D	CS	M8214-0-1	D
SCALE	— 1 —	SHEET	3 OF 20	DIST.	



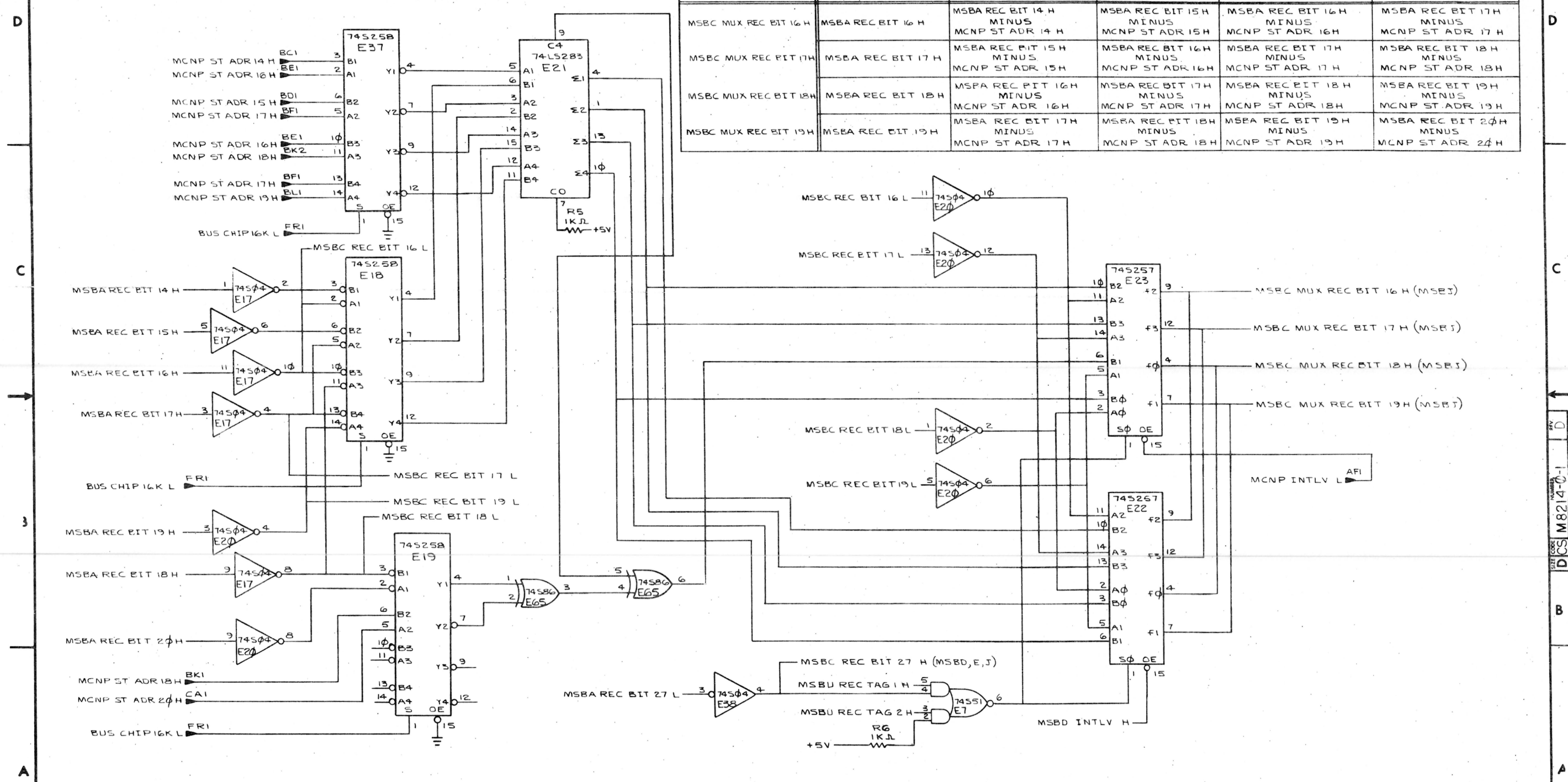
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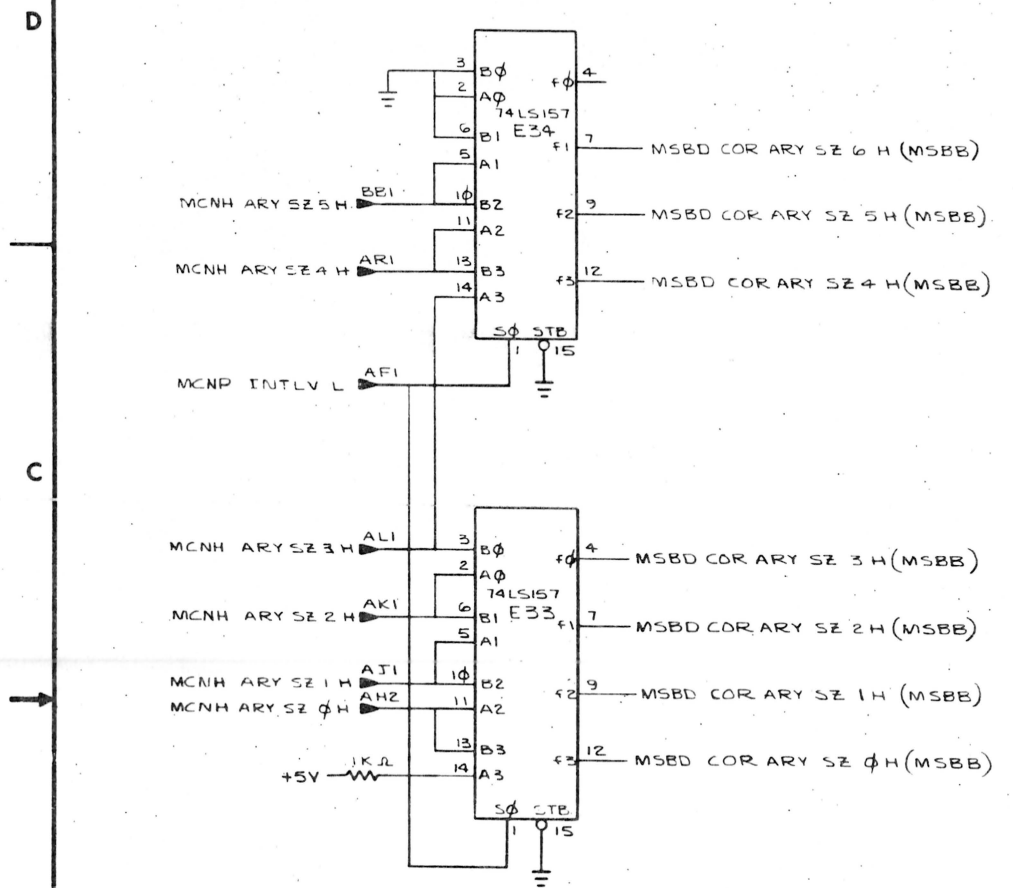
REVISIONS		
CHK	CHANGE NO.	REV.

(ARRAY ADDRESS DECODE)		(SLOT 20)	
TITLE	MEMORY SBI BOARD (MSBB)	NUMBER	D CS M8214-0-1
SCALE	1/4	SHEET	5 OF 20
REV.	D	REV.	D

MULTIPLEXER OUTPUTS (BOARD SELECT)	DATA TAG OR COMMAND ADDRESS TAG FOR I/O SPACE	COMMAND ADDRESS TAG TO THE MEMORY ARRAY			
		4K MOS CHIP NON INTERLEAVED MEMORY	4K MOS CHIP INTERLEAVED MEMORY	16K MOS CHIP NON INTERLEAVED MEMORY	16K MOS CHIP INTERLEAVED MEMORY
MSBC MUX REC BIT 16 H	MSBA REC BIT 16 H	MSBA REC BIT 14 H MINUS MCNP ST ADR 14 H	MSBA REC BIT 15 H MINUS MCNP ST ADR 15 H	MSBA REC BIT 16 H MINUS MCNP ST ADR 16 H	MSBA REC BIT 17 H MINUS MCNP ST ADR 17 H
MSBC MUX REC BIT 17 H	MSBA REC BIT 17 H	MSBA REC BIT 15 H MINUS MCNP ST ADR 15 H	MSBA REC BIT 16 H MINUS MCNP ST ADR 16 H	MSBA REC BIT 17 H MINUS MCNP ST ADR 17 H	MSBA REC BIT 18 H MINUS MCNP ST ADR 18 H
MSBC MUX REC BIT 18 H	MSBA REC BIT 18 H	MSBA REC BIT 16 H MINUS MCNP ST ADR 16 H	MSBA REC BIT 17 H MINUS MCNP ST ADR 17 H	MSBA REC BIT 18 H MINUS MCNP ST ADR 18 H	MSBA REC BIT 19 H MINUS MCNP ST ADR 19 H
MSBC MUX REC BIT 19 H	MSBA REC BIT 19 H	MSBA REC BIT 17 H MINUS MCNP ST ADR 17 H	MSBA REC BIT 18 H MINUS MCNP ST ADR 18 H	MSBA REC BIT 19 H MINUS MCNP ST ADR 19 H	MSBA REC BIT 20 H MINUS MCNP ST ADR 20 H



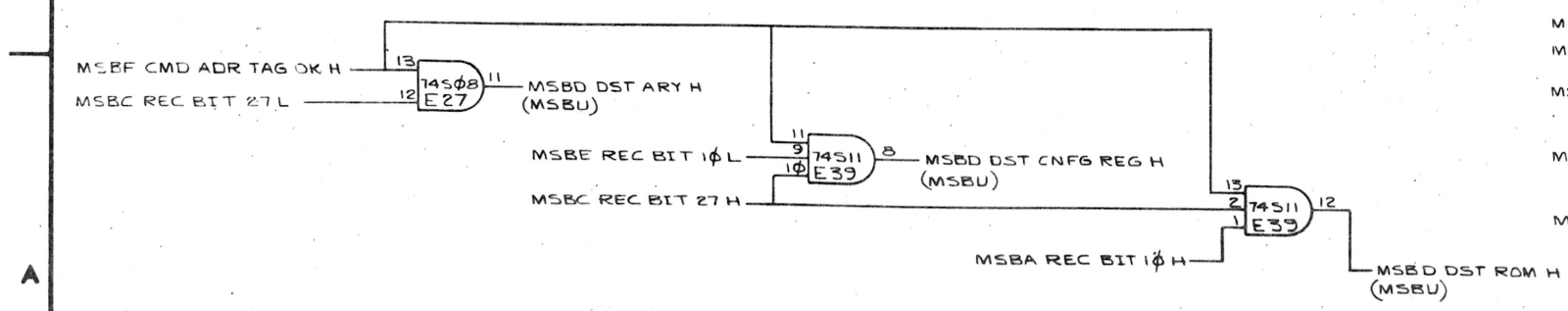
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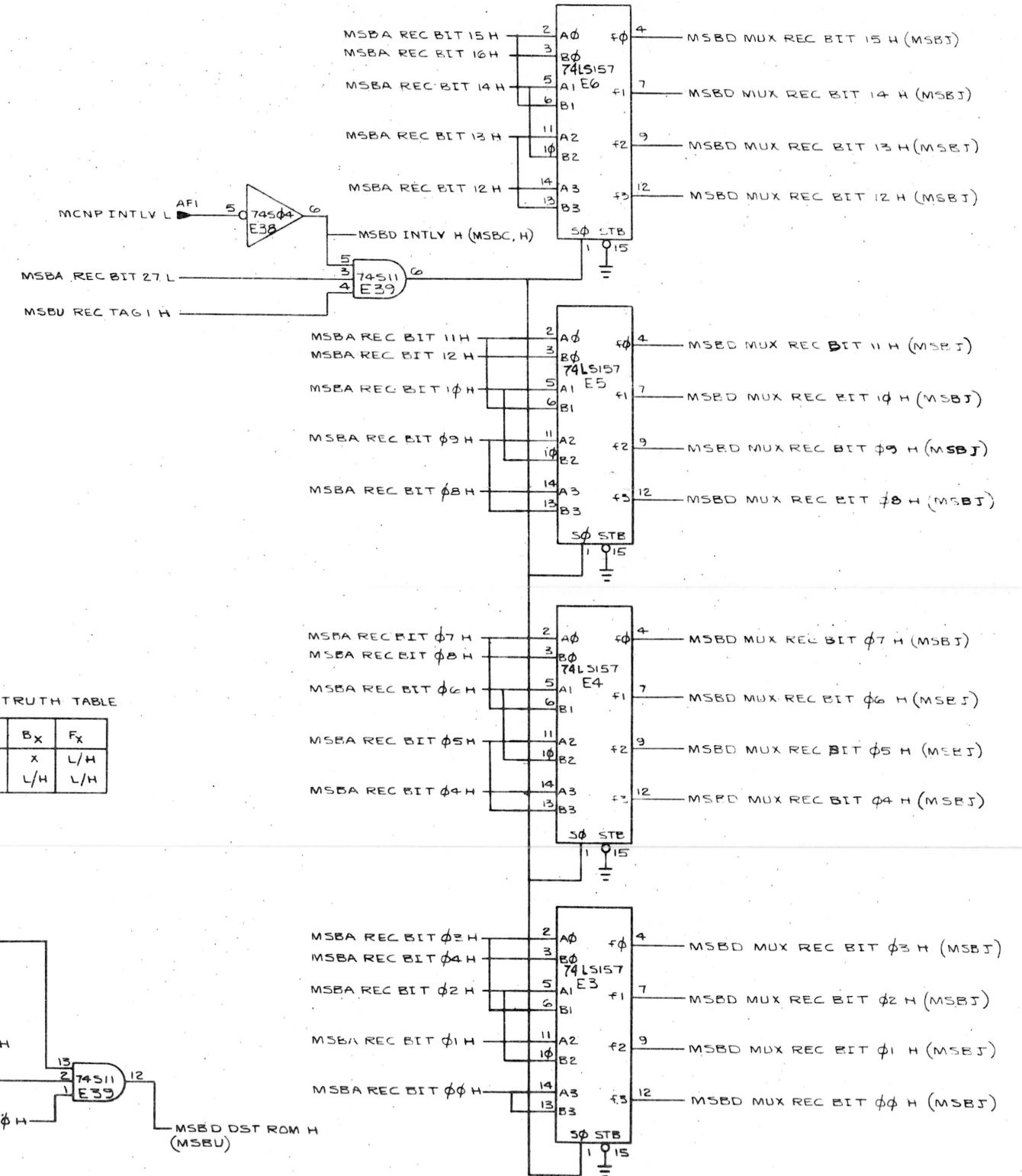
INTERLEAVE ARRAY SIZE BIT SHIFT

74LS157 TRUTH TABLE

S ₀	A _x	B _x	F _x
L	L/H	x	L/H
H	x	L/H	L/H

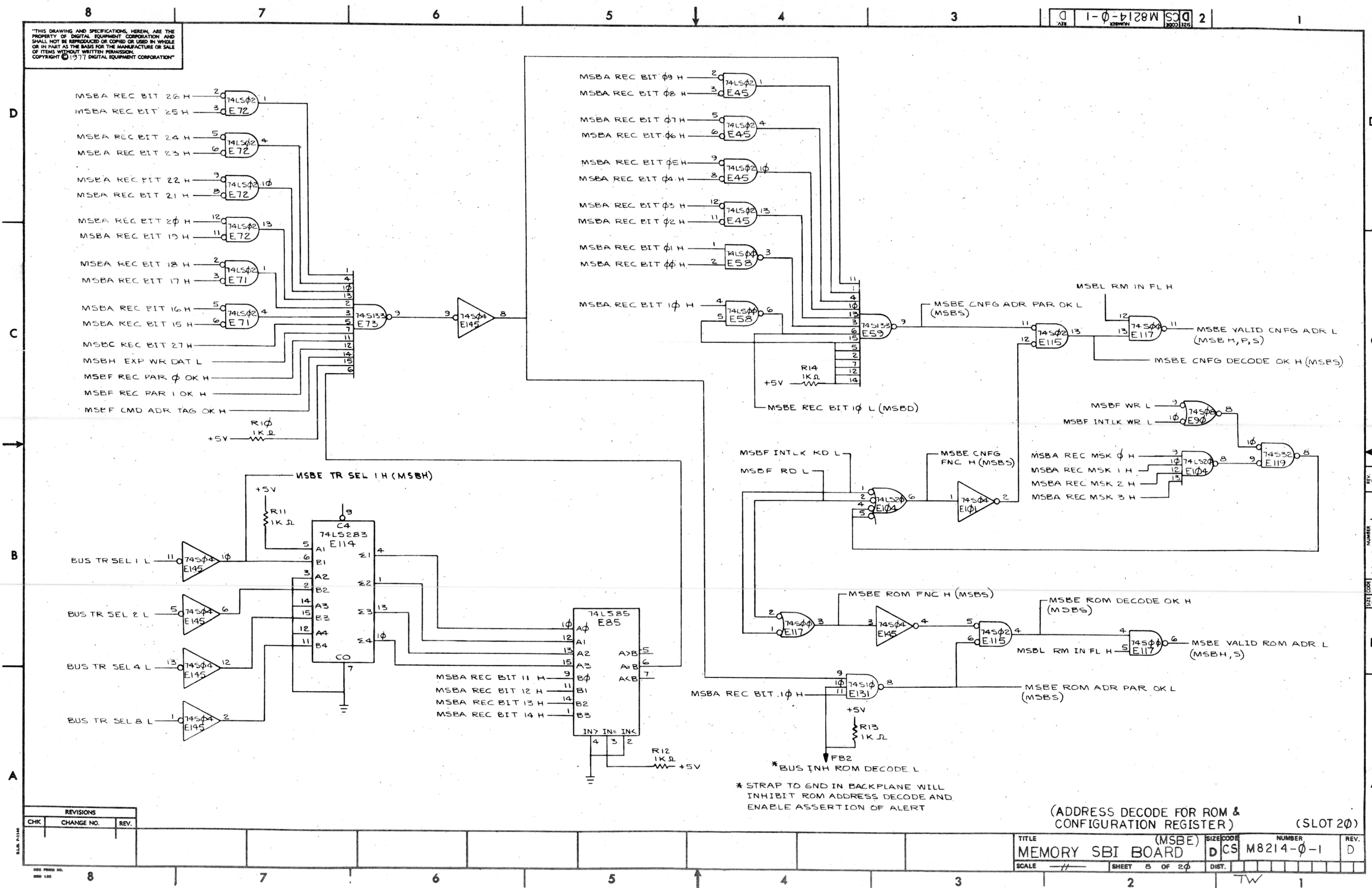


COMMAND DESTINATION DECODE

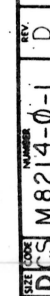


INTERLEAVE ADDRESS BIT SHIFT

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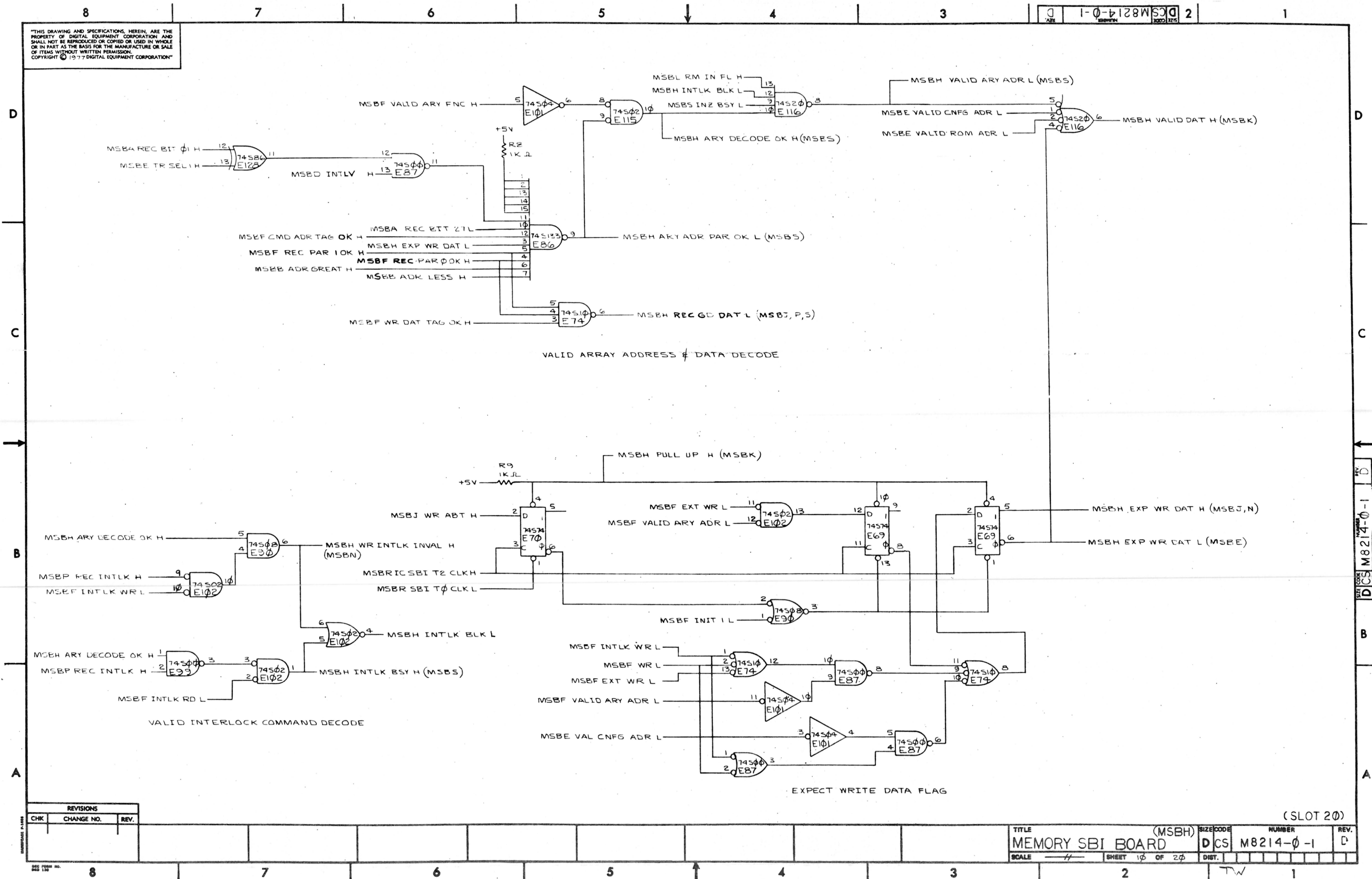


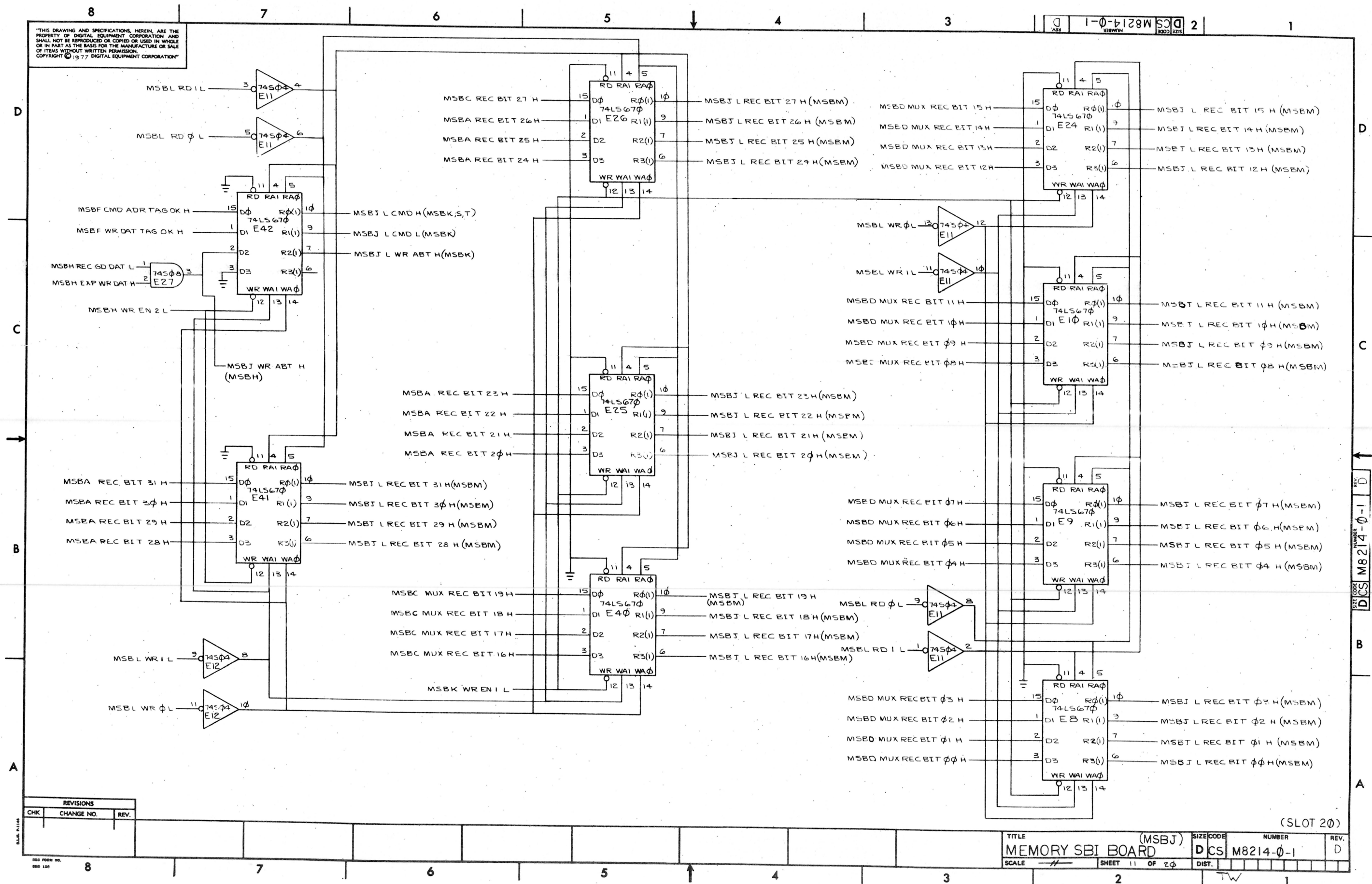
* STRAP TO GND IN BACKPLANE WILL INHIBIT ROM ADDRESS DECODE AND ENABLE ASSERTION OF ALERT



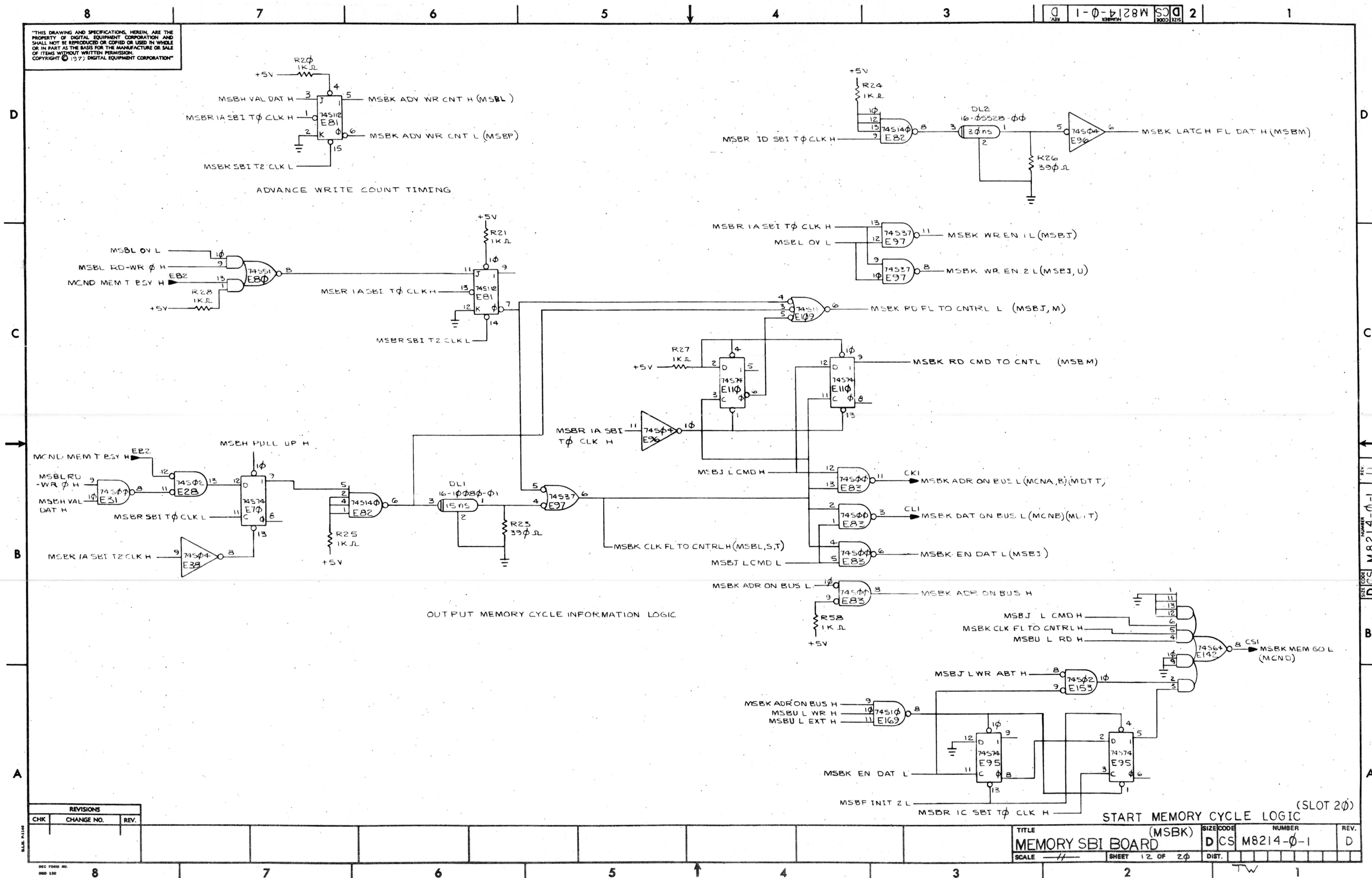
TITLE		(MSBF)	SIZE CODE	NUMBER	REV.
MEMORY SBI BOARD			D CS	M8214-0-1	D
SCALE	1/1	SHEET	3 OF 20	DIST.	

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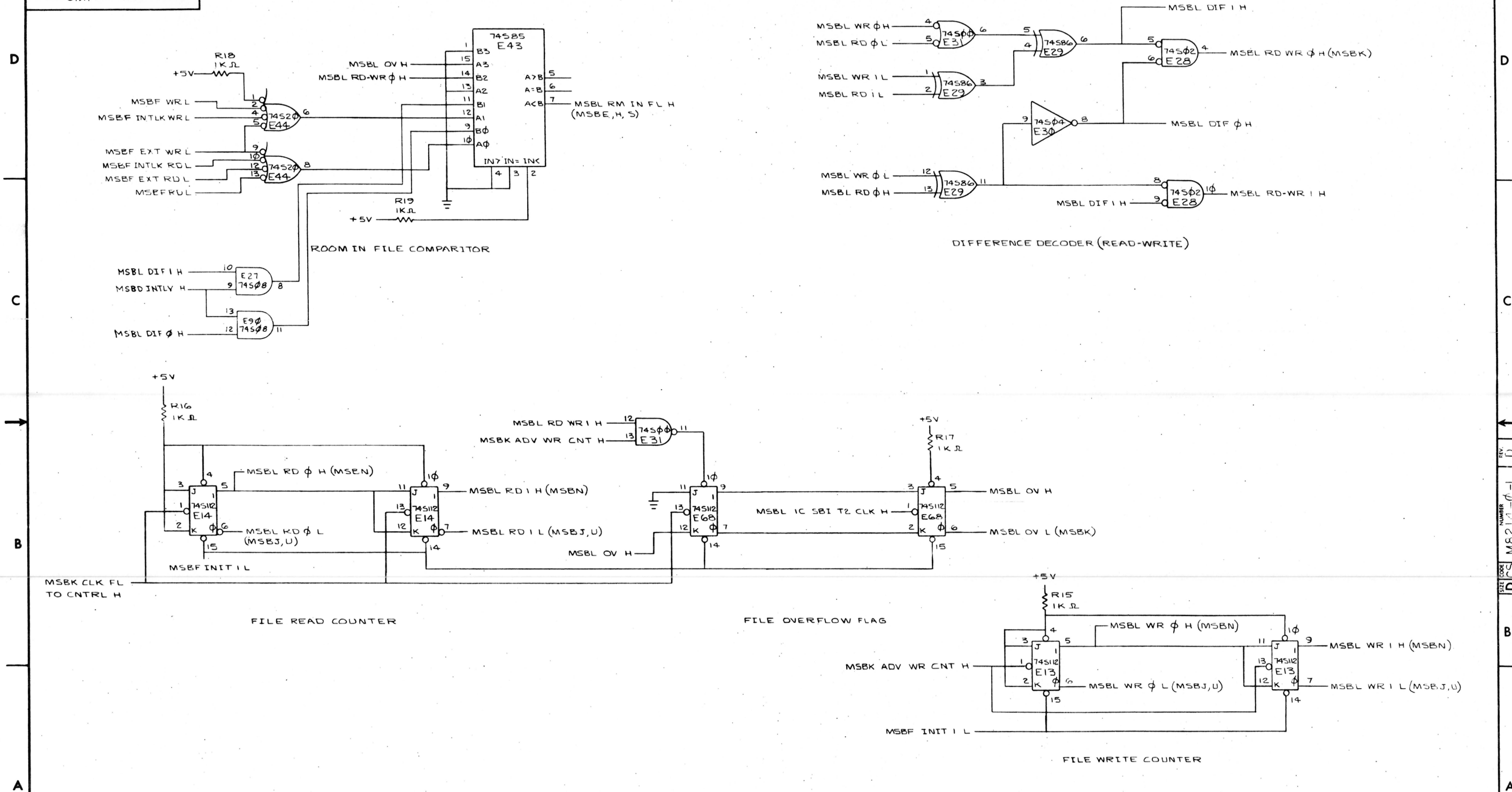
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REVISIONS		
CHK	CHANGE NO.	REV.

TITLE		SIZE	CODE	NUMBER	REV.
MEMORY SBI BOARD (MSBK)		D	CS	M8214-0-1	D
SCALE	1/1	SHEET	12 OF 20	DIST.	

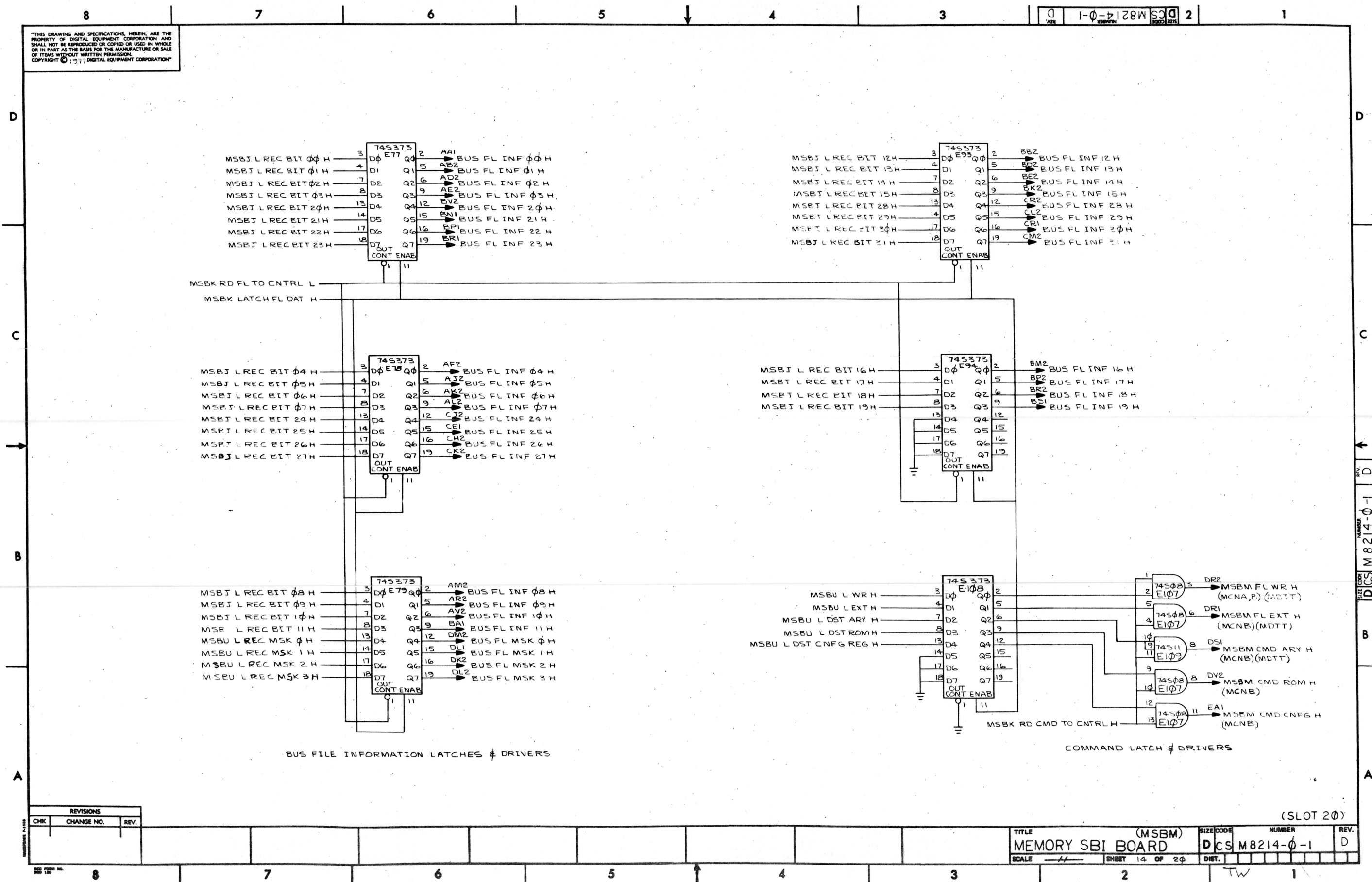
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REVISIONS		
CHK	CHANGE NO.	REV.

TITLE		(MSBL)	SIZE	CODE	NUMBER	REV.
MEMORY SBI BOARD		D	CS	M8214-0-1	D	
SCALE		SHEET		13 OF 20		DIST.

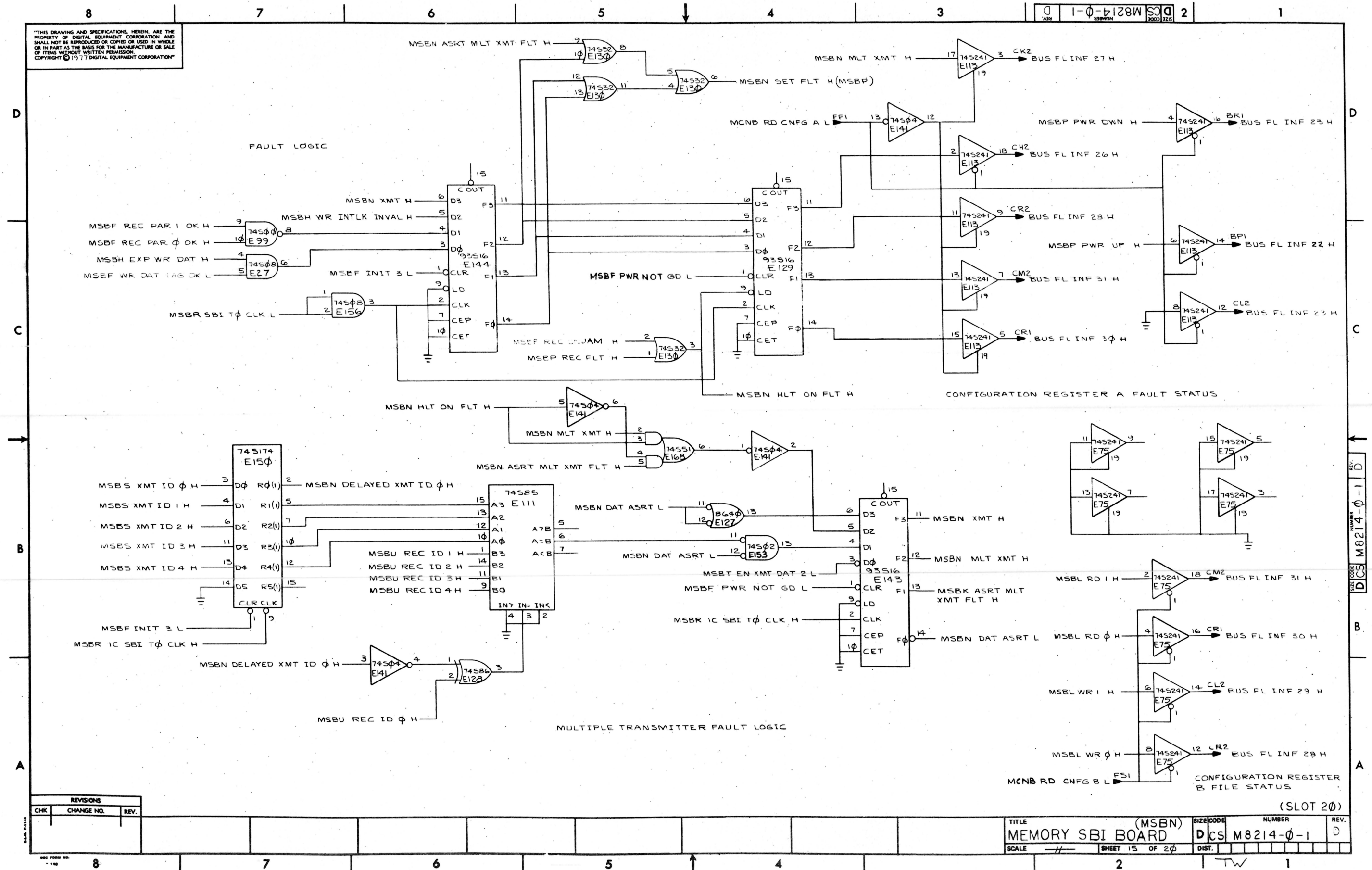
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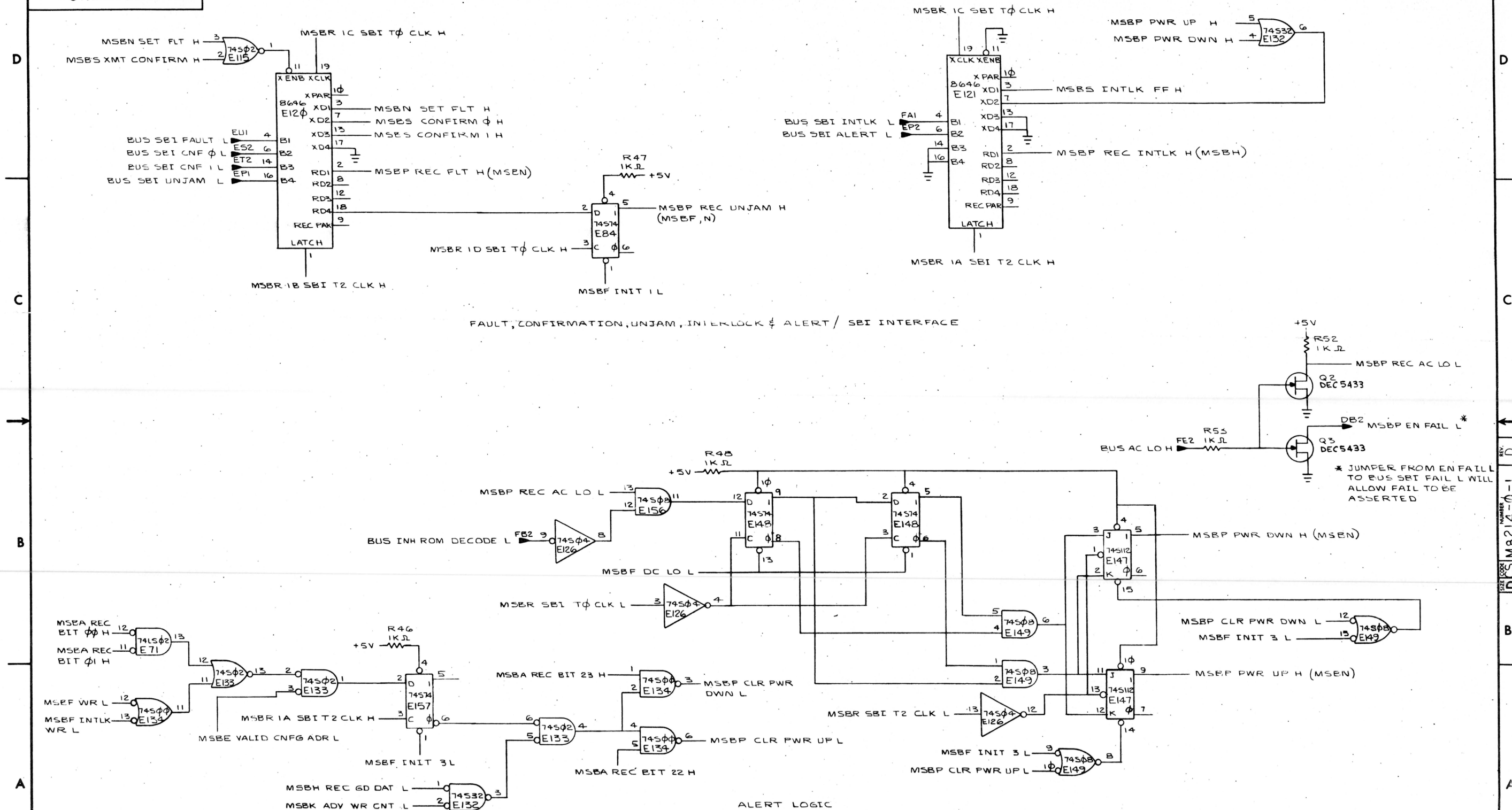
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE		(MSBM)	SIZE CODE	NUMBER	REV.
MEMORY SBI BOARD		DCS M8214-0-1	D		
SCALE	1/1	SHEET	14 OF 20	DIST.	

(SLOT 20)



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REVISIONS		
CHK	CHANGE NO.	REV.

TITLE		(MSBP)	SIZE CODE	NUMBER	REV.
MEMORY SBI BOARD		D	CS	M8214-0-1	D
SCALE		SHEET 16 OF 20		DIST.	

(SLOT 20)

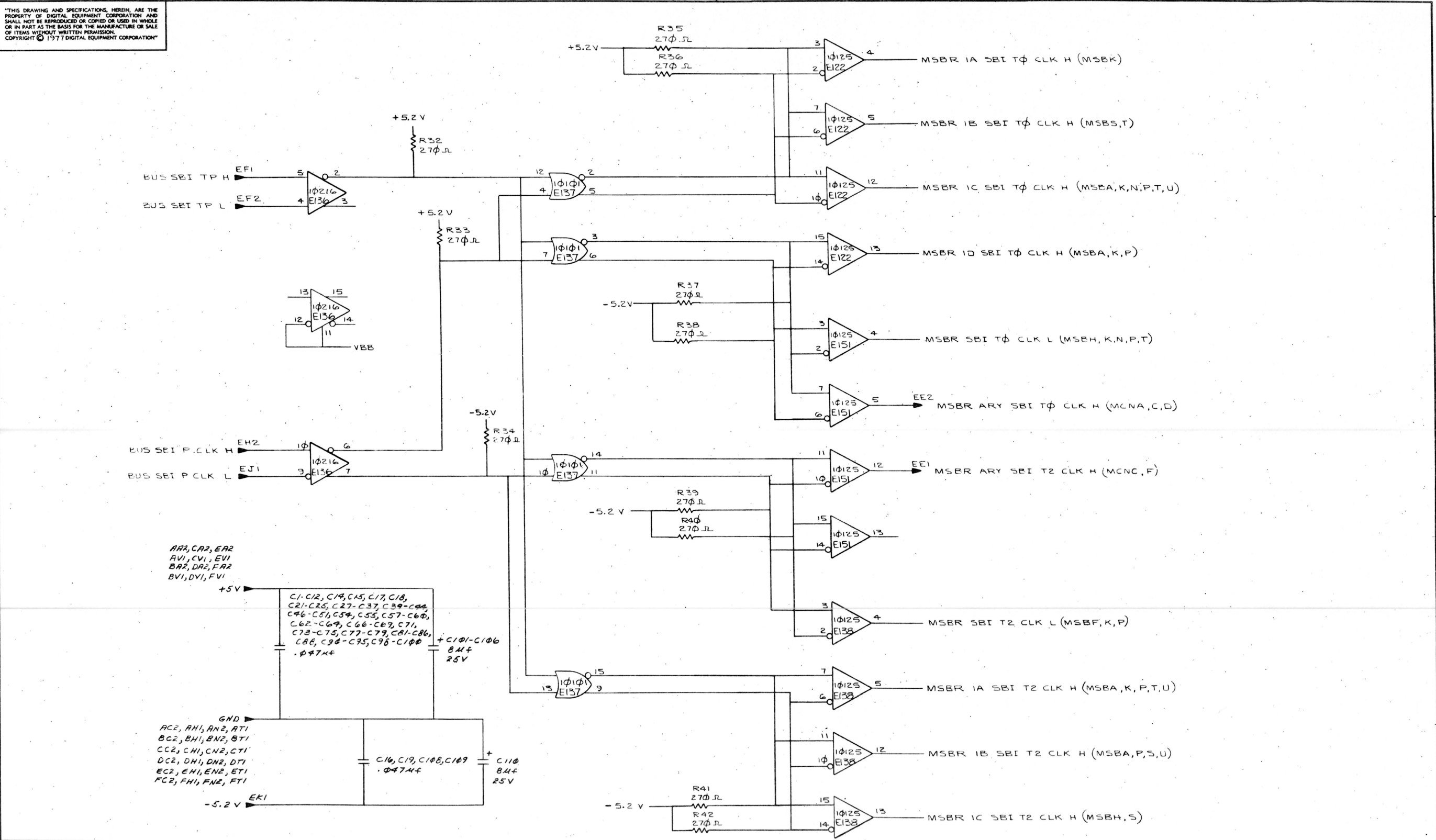
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D

C

B

A

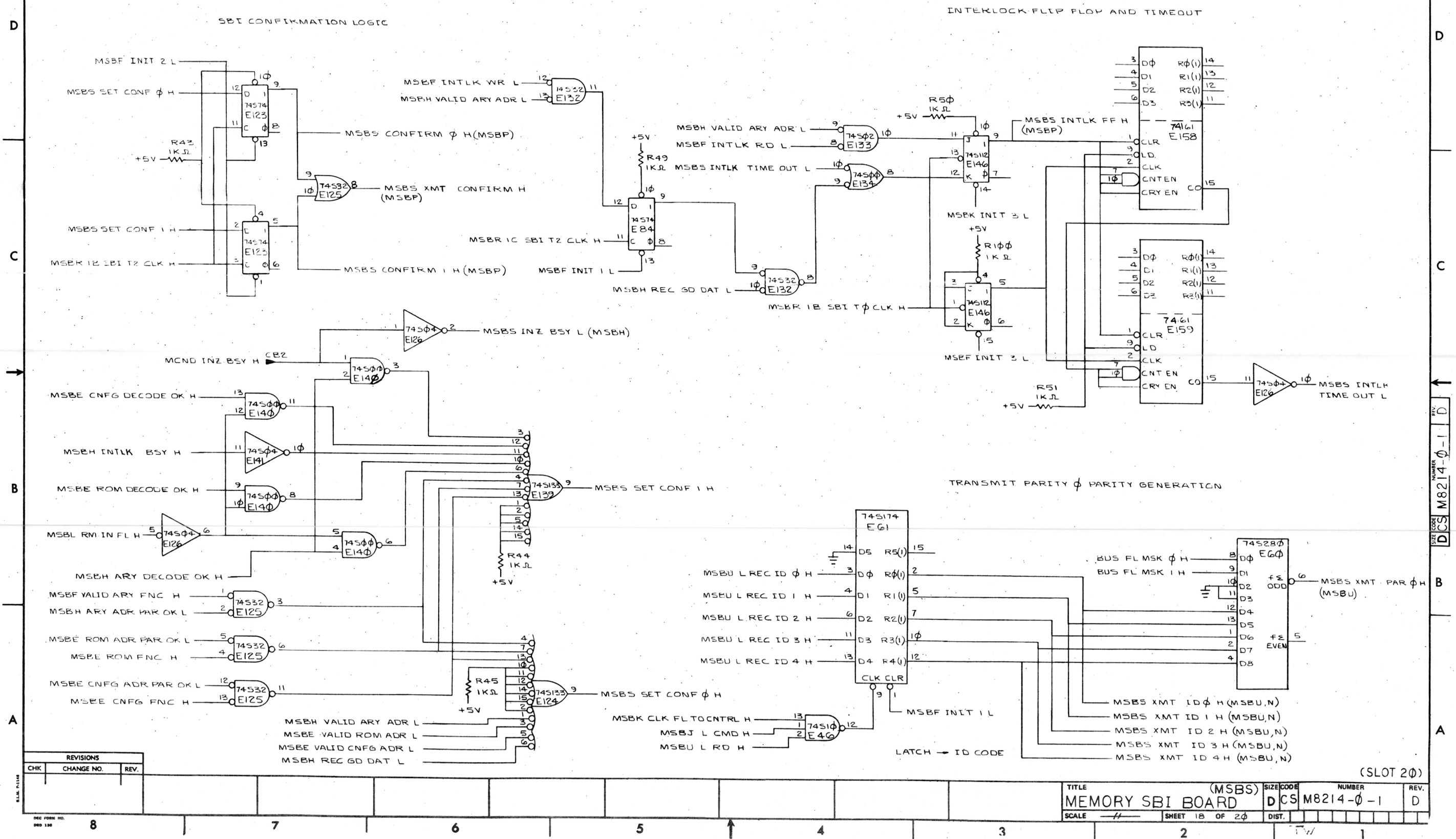


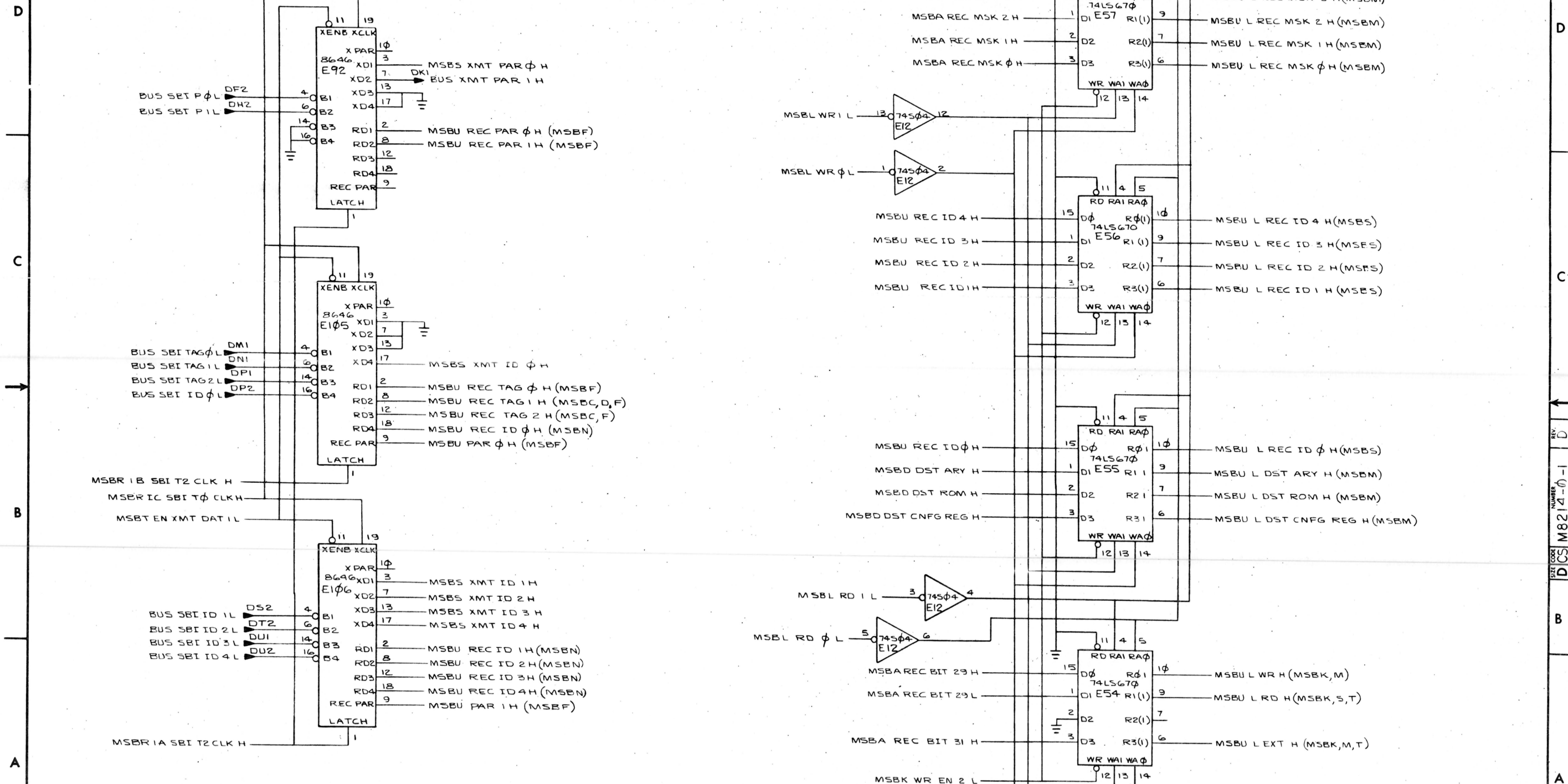
REVISIONS		
CHK	CHANGE NO.	REV.

DEC FORM NO. 130

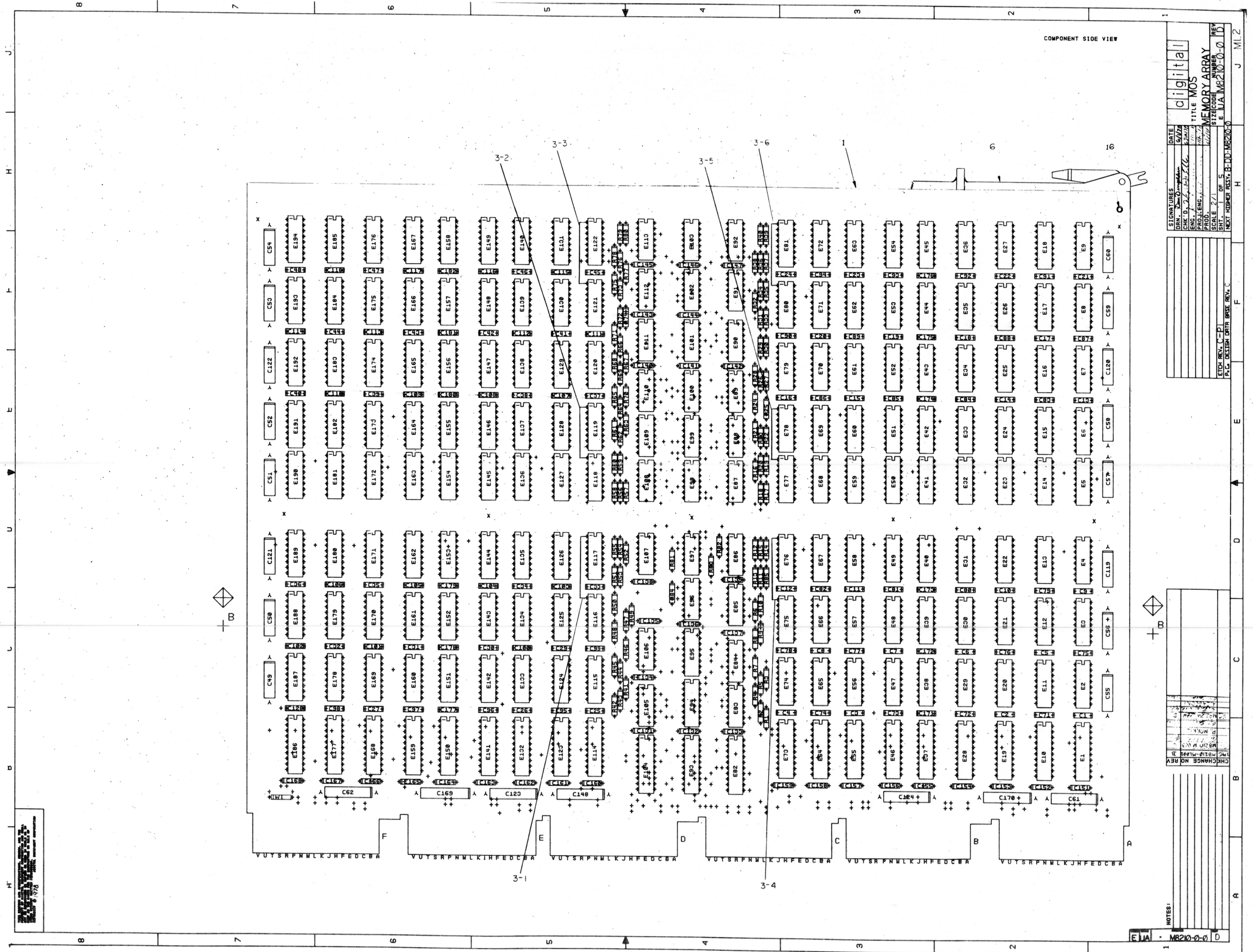
TITLE		(SBI CLOCK DECODE)		(SLOT 20)	
MEMORY SBI BOARD		(MSBR)			
SCALE		SHEET	17 OF 20	DIST.	

REV. 0
NUMBER
M8214-0-1
D CS






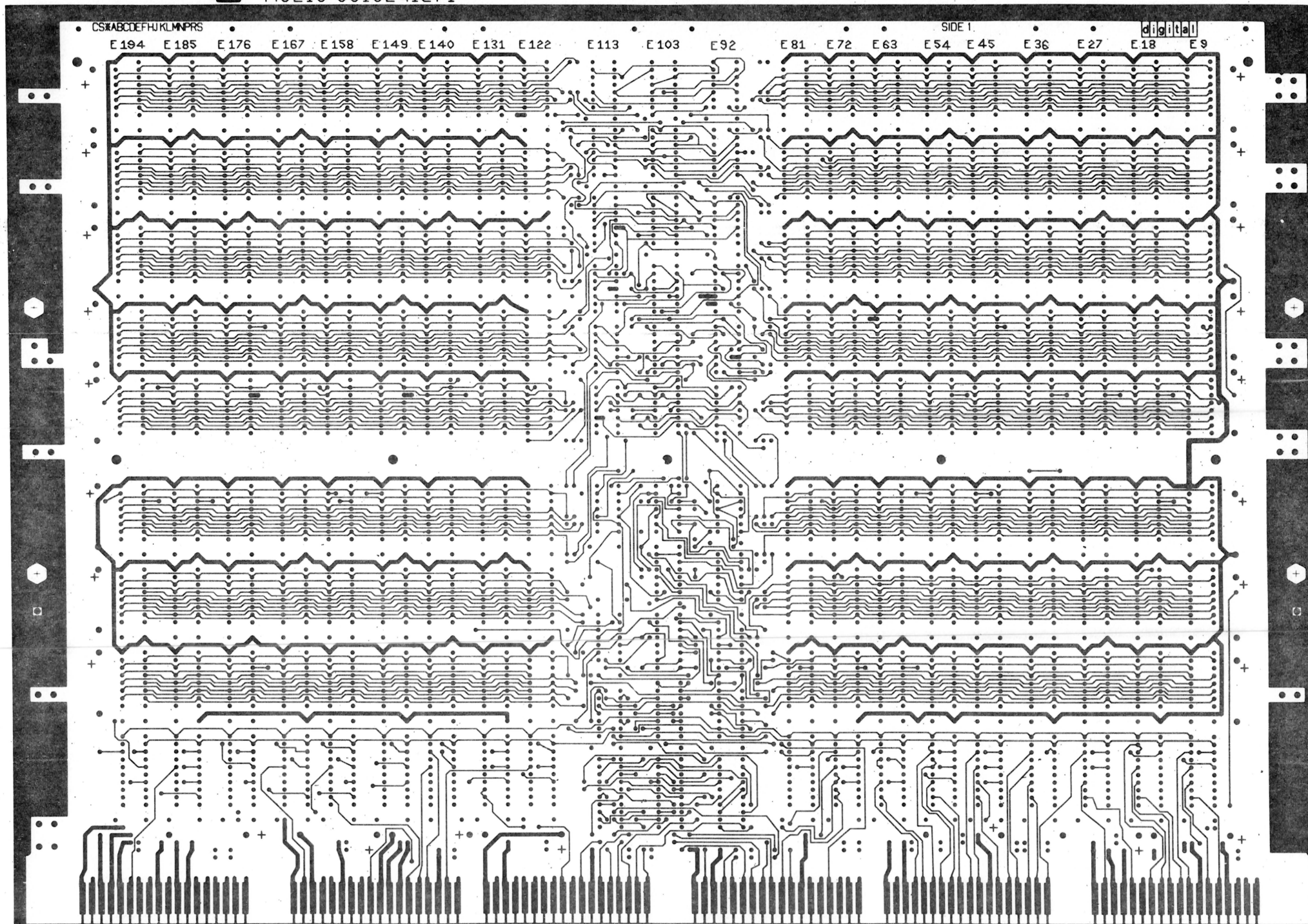
D.L.B. P-1145



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L1  M8210 5013241CP1

LAYER 1

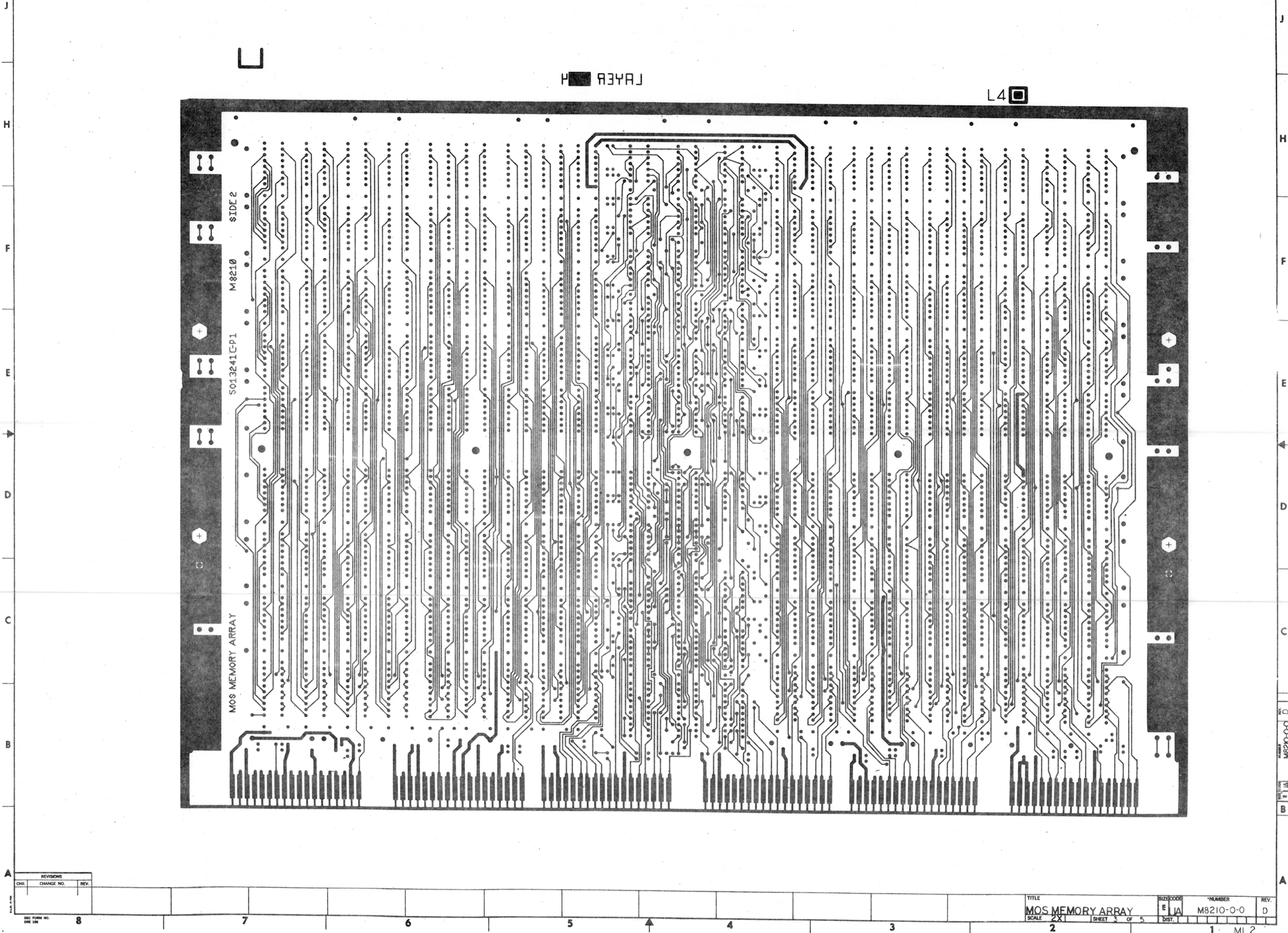


REVISIONS		
CHK	CHANGE NO.	REV.

TITLE		SIZE CODE	NUMBER	REV.
MOS MEMORY ARRAY		E	1A M8210-0-0	D
SCALE	2X	SHEET	2 OF 5	DIST. 1

ML2

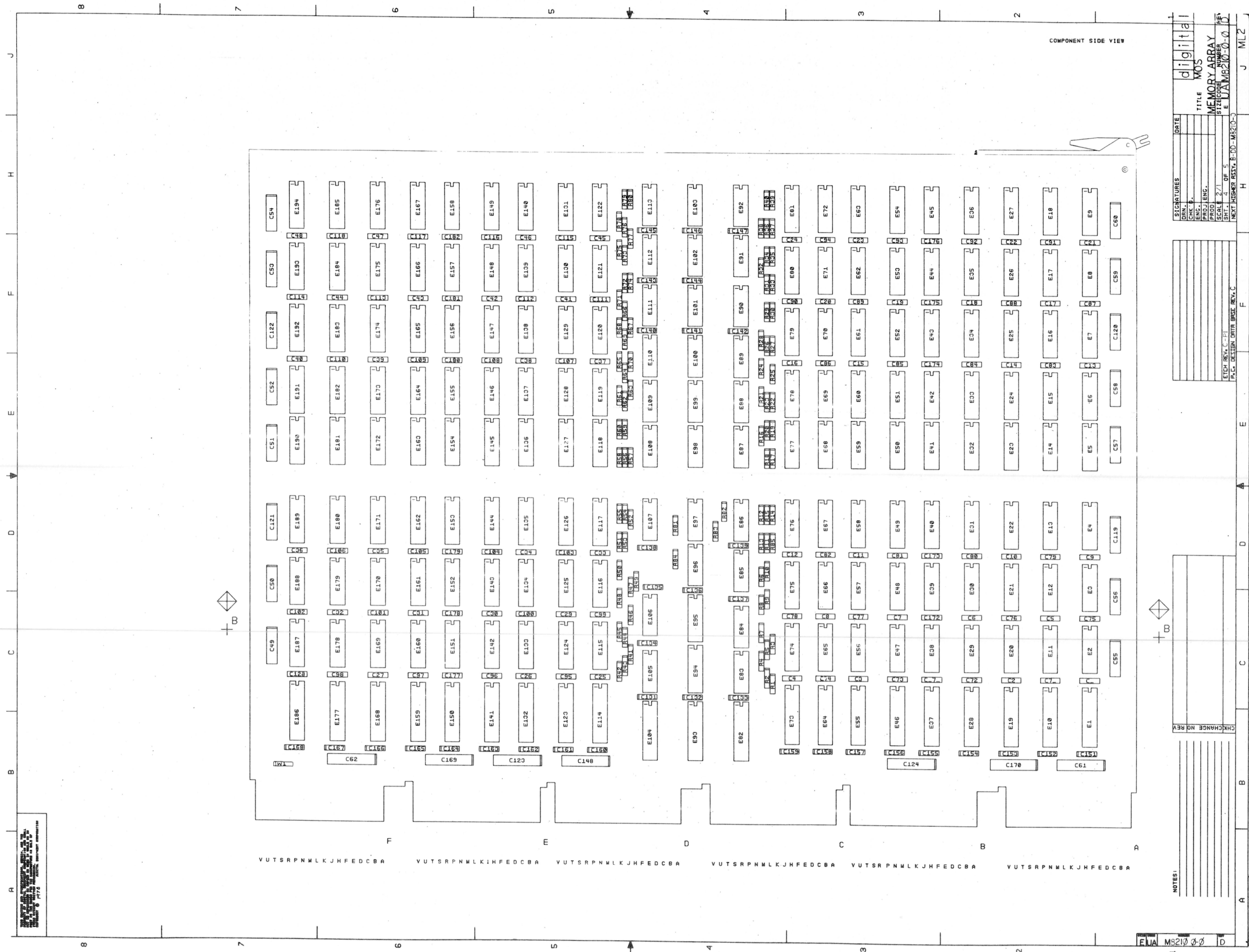
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REVISIONS		
CHG.	CHANGE NO.	REV.

DEC FORM NO. 100
100

TITLE	SIZE/SCALE	NUMBER	REV.
MOS MEMORY ARRAY	E 1/8	M8210-0-0	D
SCALE 2X	SHEET 3 OF 5	DIST.	1 ML 2



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REWORK INSTRUCTION SHEET

WIRE ADDS SIDE 1

3-1 ADD WIRE FROM E116-1 TO E117-1.
3-2 ADD WIRE FROM E118-1 TO E119-1.
3-3 ADD WIRE FROM E121-1 TO E122-1.
3-4 ADD WIRE FROM E75-1 TO E76-1.
3-5 ADD WIRE FROM E77-1 TO E78-1.
3-6 ADD WIRE FROM E80-1 TO E81-1.

REVISION HISTORY		
DATE	ECO NUMBER	REV

TITLE MOS
MEMORY ARRAY

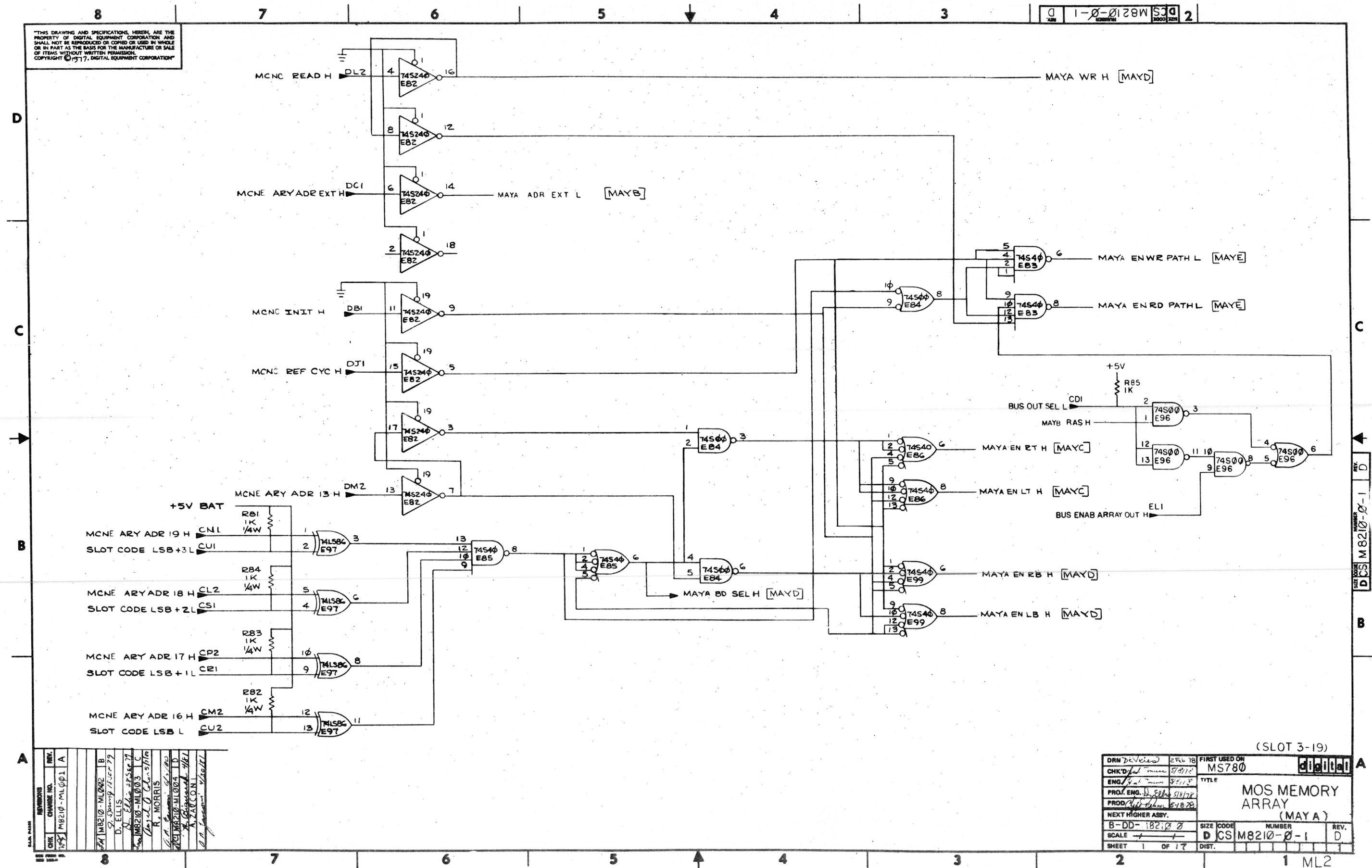
DOCUMENT NUMBER		
REV	NUMBER	REV
E	UA M8210-0-0	D
SCALE 1 SHEET 5 OF 5		

ML2

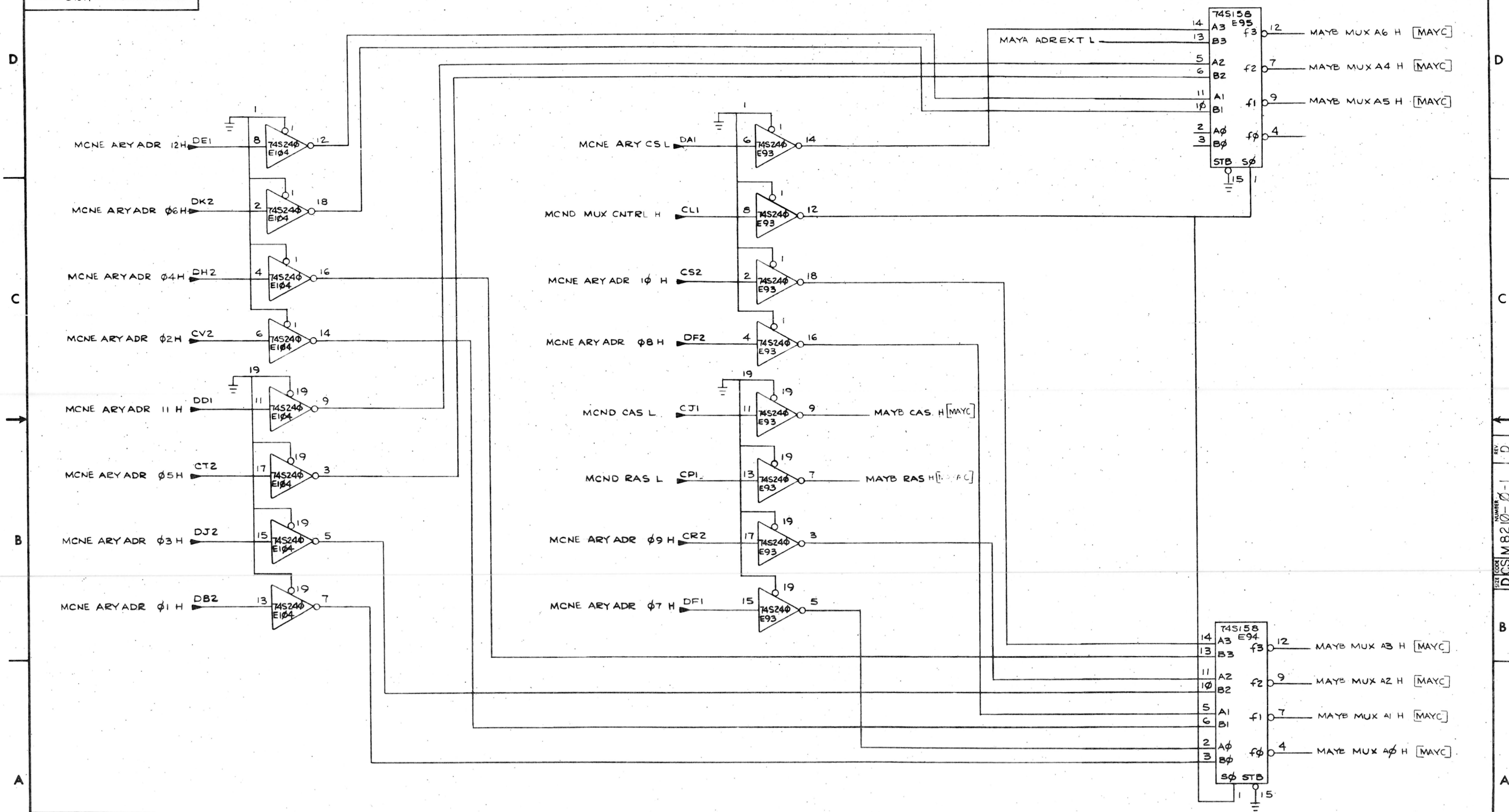
LINE	ITEM	DOCUMENT NO.	PART NO.	DESCRIPTION	QTY	REFERENCE DESIGNATORS
1	1		5013241-00	ETCH BOARD FOR M8210	1	
2	2		1001796-00	50 MFD 25V 6% 30D AL EL (10-12	7	C61,C62,C123,C124,C148,C169,
					CONT	C170
3	3		1010274-00	.22 MFD 50V X% 7C023 CER.	108	C1-C27,C29-C48,C71-C118,C128,
					CONT	C171-C182
4	4		1012084-01	8 MFD 25V 6% 30D AL EL (10-12	16	C49-C60,C119-C122
5	5		1012784-00	.047 MFD 50V X% CER.	35	C131-C147,C151-C168
6	6		1210711-02	HANDLE, HEX MODULE, 10-1/2	1	
7	7		1300365-00	1 K 1/4W 5% CC (13-00	5	R81-R85
8	8		1301522-00	27 1/4W 5% CC (13-00	80	R1-R80
9	9		1910532-00	74S00 NAND GATE-QUAD 2IN	22	E84,E87-E92,E96,E98,E100-E103,
					CONT	E105-E113
10	10		1910541-00	74S40 NAND GATE-DUAL 4IN,BUFFER 16	4	E83,E85,E86,E99
11	11		1910549-00	74S158 MUX 1 OF 2 (QUAD)	2	E94,E95
12	12		1912829-00	LS86 X-OR GATE-QUAD 2IN	1	E97
13	13		1913462-00	74S240 OCTAL BUFFER, INVERTING TRI-STA	3	E82,E93,E104
14	14		1913777-00	LS240 DRIVER, LINE, OCTAL, TRI-ST	18	E1,E10,E19,E28,E37,E46,E55,
					CONT	E64,E73,E114,E123,E132,E141,
					CONT	E150,E159,E168,E177,E186
15	15		2113825-01	16K MOS RAM 200NS 16PIN DYNA	144	E2-E9,E11-E18,E20-E27,E29-E36,
					CONT	E38-E45,E47-E54,E56-E63,
					CONT	E65-E72,E74-E81,E115-E122,
					CONT	E124-E131,E133-E140,E142-E149,
					CONT	E151-E158,E160-E167,E169-E176,
					CONT	E178-E185,E187-E194
16	16		9000024-01	EYELET, ROLLED FLANGE, .121 OD X .196 LG	12	
17	17		9009185-00	JUMPER, WIRE, INSULATED, BLACK BAND	1	W1
18	18		9105740-55	***** THIS ITEM IS NOT USED *****	-	

REVISION HISTORY			VARIATIONS FOR THIS ASSY.		FIRST USED ON: 11780		DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS			
CHK	ECD NO	REV	AC, AB	MADE BY:	A. CORCORAN	DATE: 06-APR-78	TITLE			
	INIT	A					PARTS LIST			
	ML001	B					MOS MEMORY ARRAY			
				CHECKED:	J. TRUSIEWICZ	DATE: 06-APR-78				
				DSN. ENG.:	J. TRUSIEWICZ	DATE: 06-APR-78				
				PROD.:	C. TANNER	DATE: 06-APR-78	K	PL	M8210-AC-DBP	B
				RESP. ENG.:	D. ELLIS	DATE: 06-APR-78	ASSY. NO.: E-UA-M8210-0-0			EDIT#
										9

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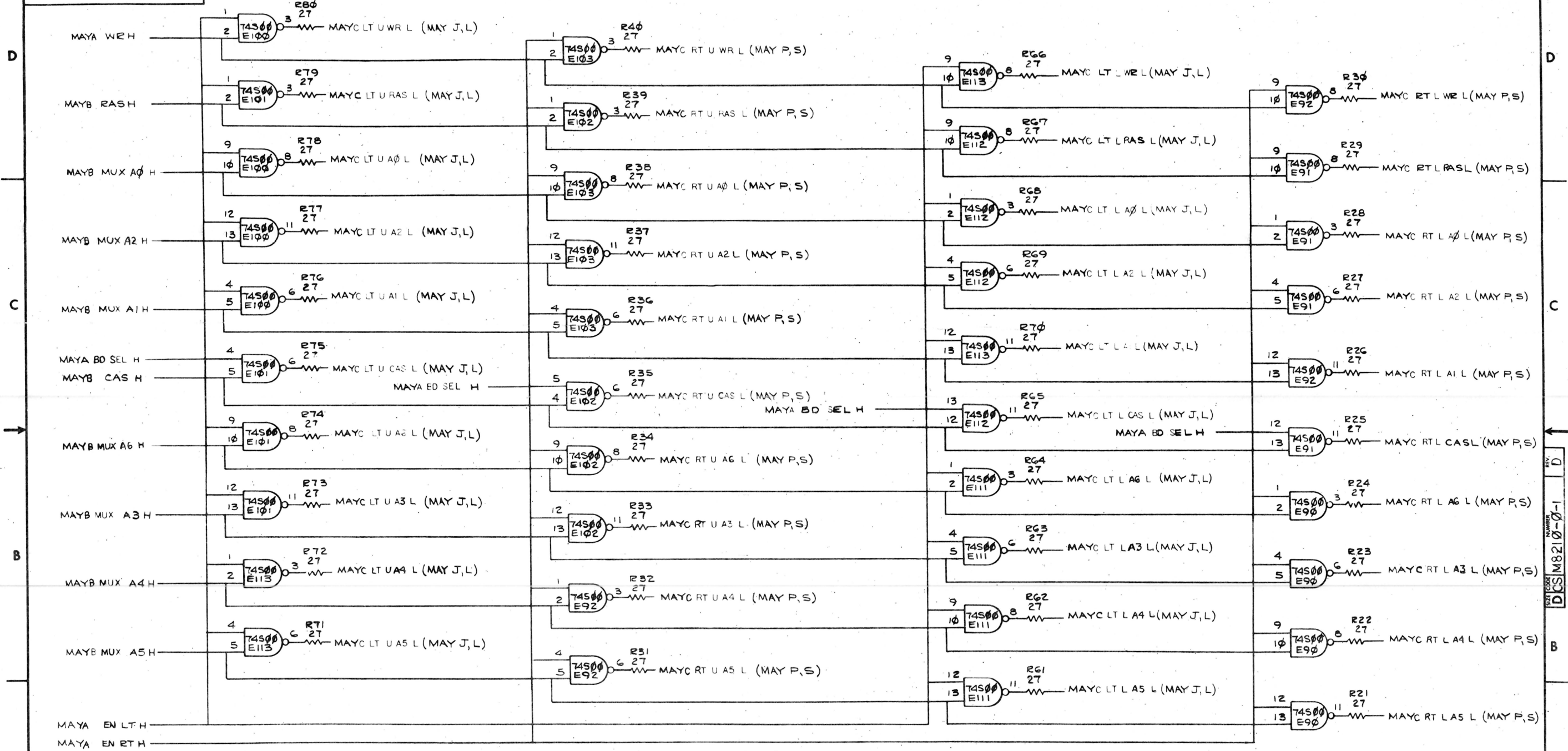
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE		MOS MEMORY ARRAY (MAYB)		SIZE CODE	D CS	NUMBER	M8210-0-1	REV.	D
SCALE		SHEET 2 OF 17		DIST.					

(SLOT 3-19)

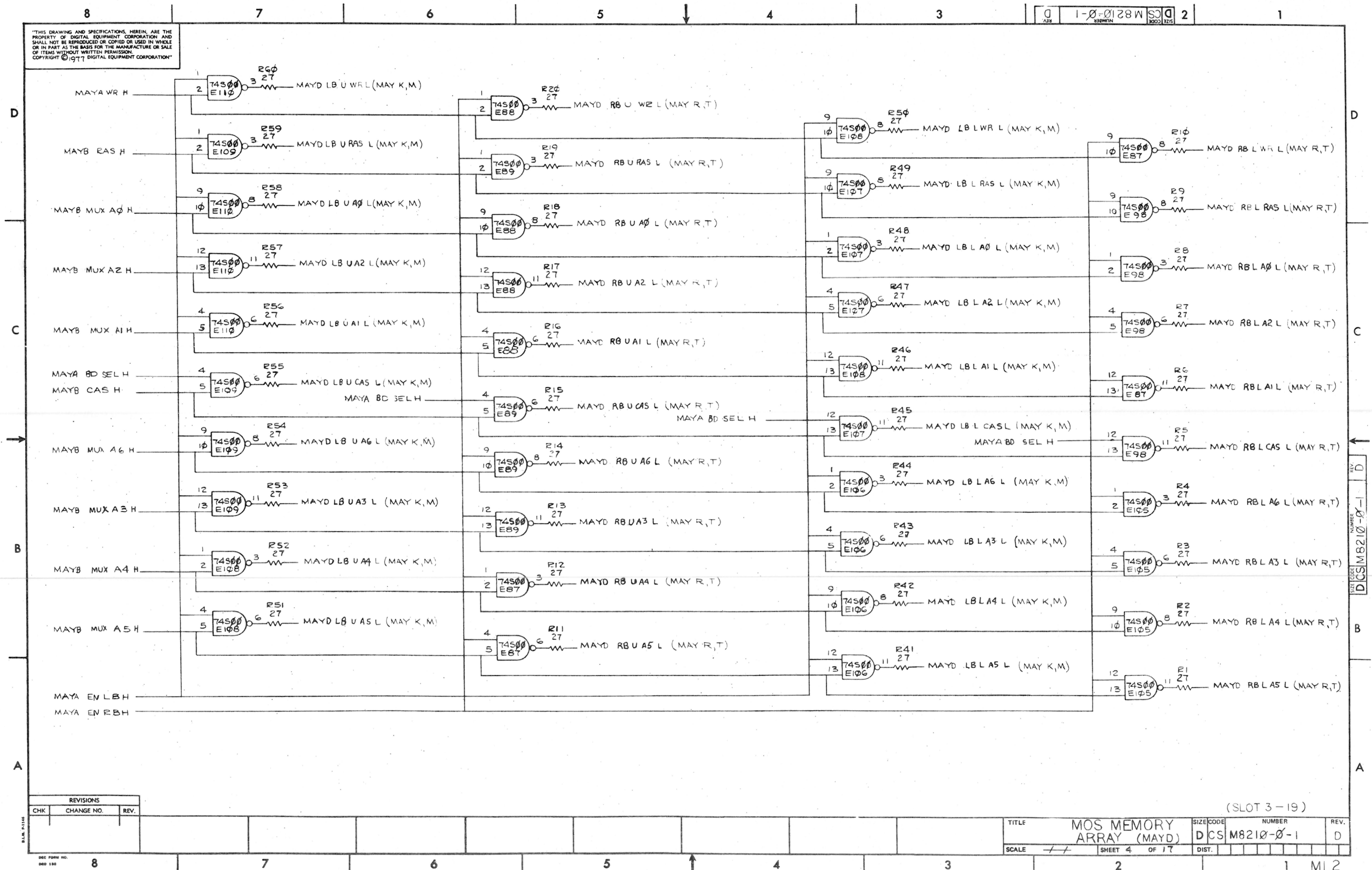
ML2

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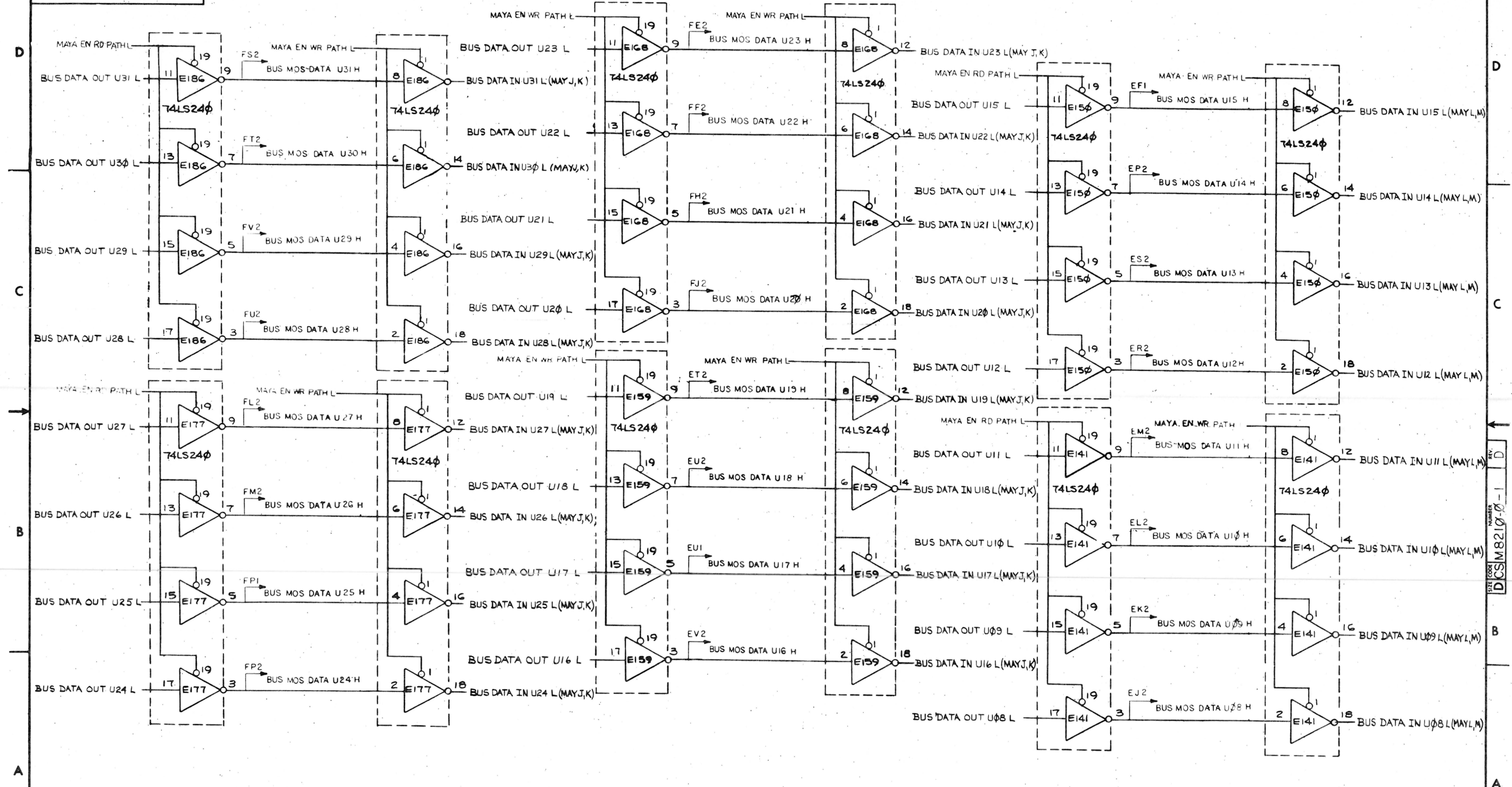


REVISIONS		
CHK	CHANGE NO.	REV.

TITLE		SIZE	CODE	NUMBER	REV.
MOS MEMORY		D	C	8210-0-1	D
ARRAY (MAYC)		D	C	8210-0-1	D
SCALE		SHEET 3 OF 17		DIST.	
8		7		6	
5		4		3	
2		1		ML2	



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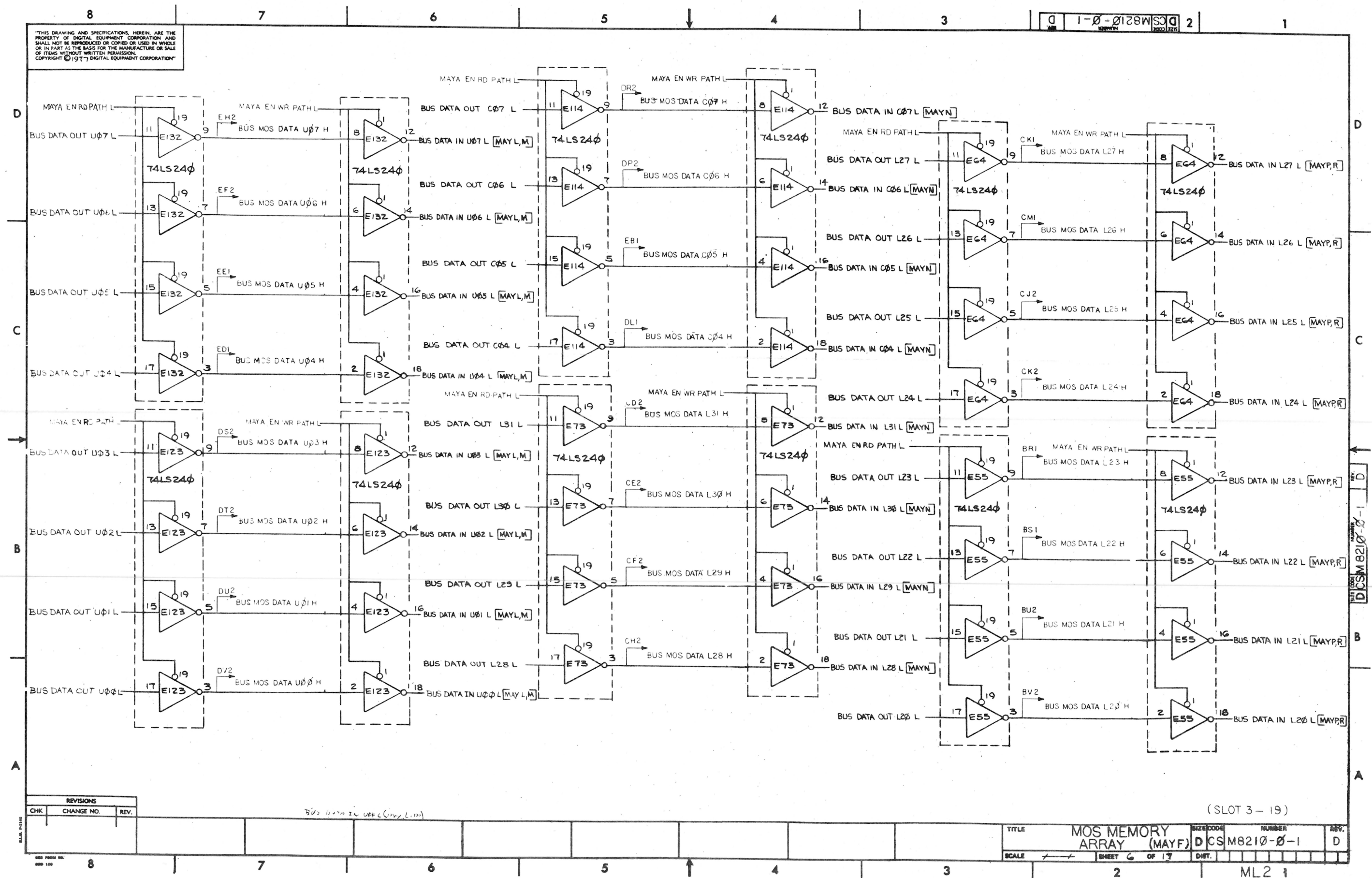


REVISIONS		
CHK	CHANGE NO.	REV.

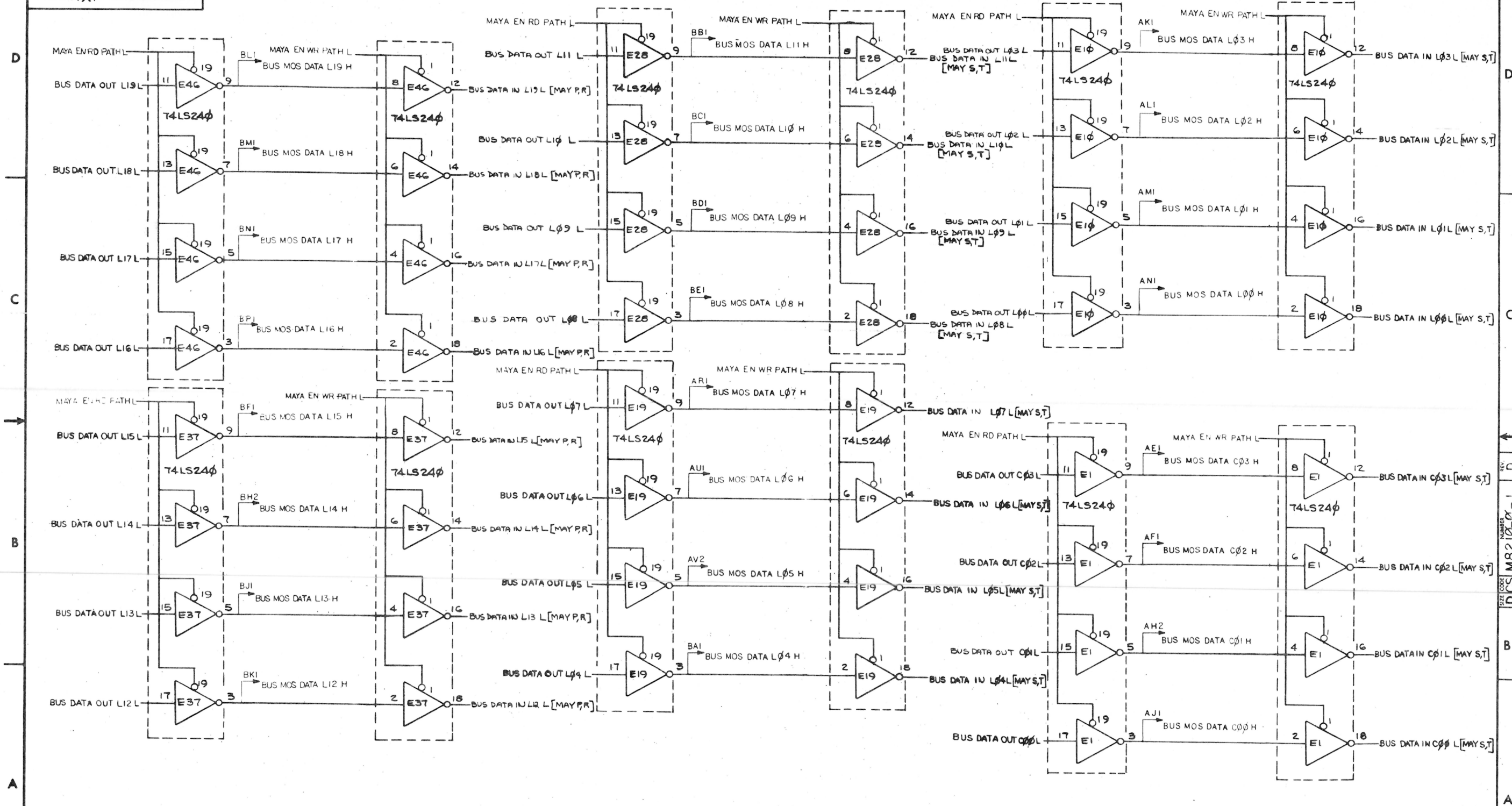
TITLE		SIZE CODE	NUMBER	REV.
MOS MEMORY ARRAY (MAYE)		DCS M8210-0-1	D	D
SCALE		SHEET 5 OF 17	DIST.	

(SLOT 3-19)

REV. D
NUMBER
DCS M8210-0-1
SIZE CODE



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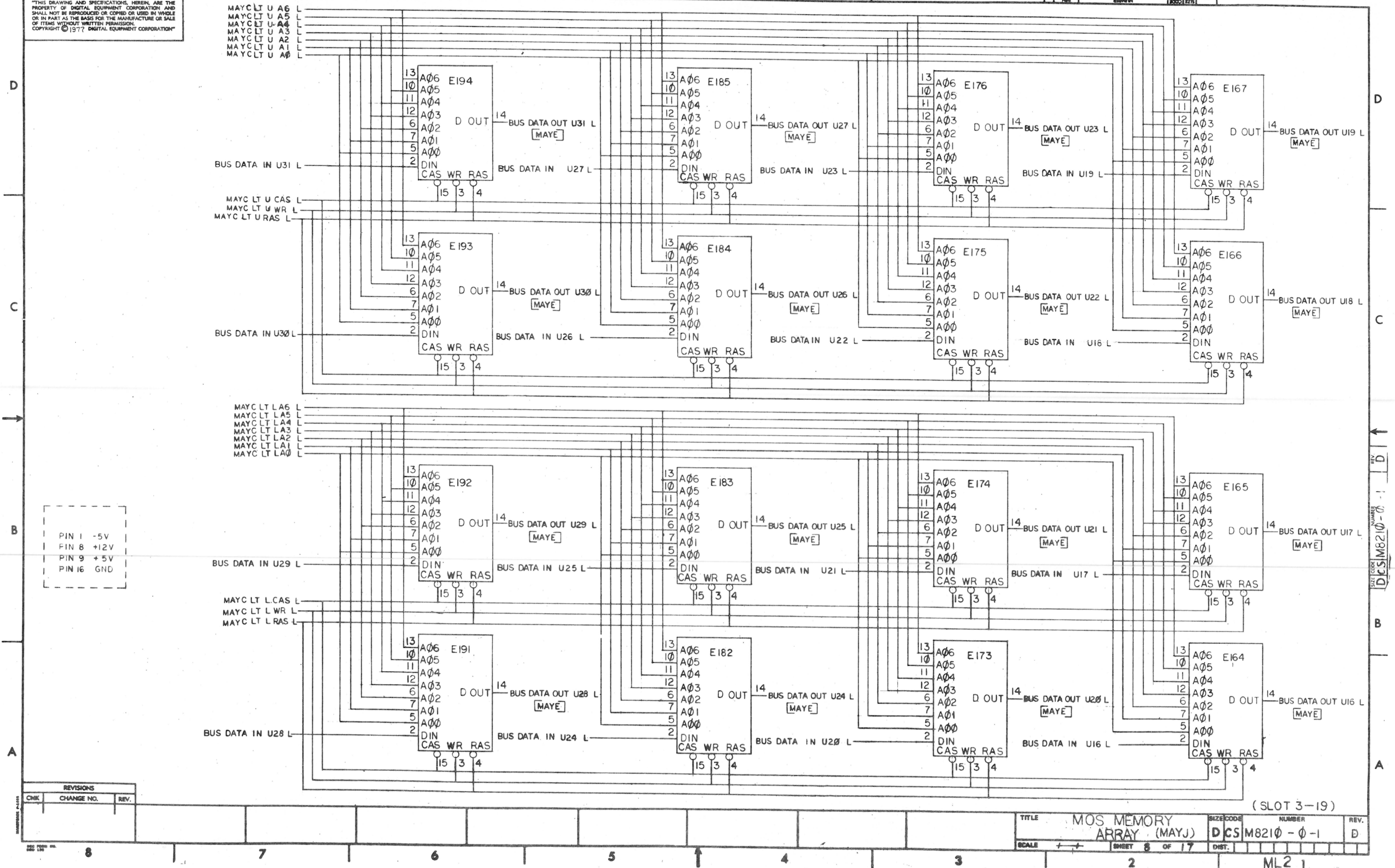
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE		MOS MEMORY ARRAY (MAYH)		SIZE CODE		NUMBER		REV.	
SCALE		1/1		SHEET 7 OF 17		DIST.		D	

(SLOT 3-19)

ML2

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REVISIONS		
CHK	CHANGE NO.	REV.

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D

C

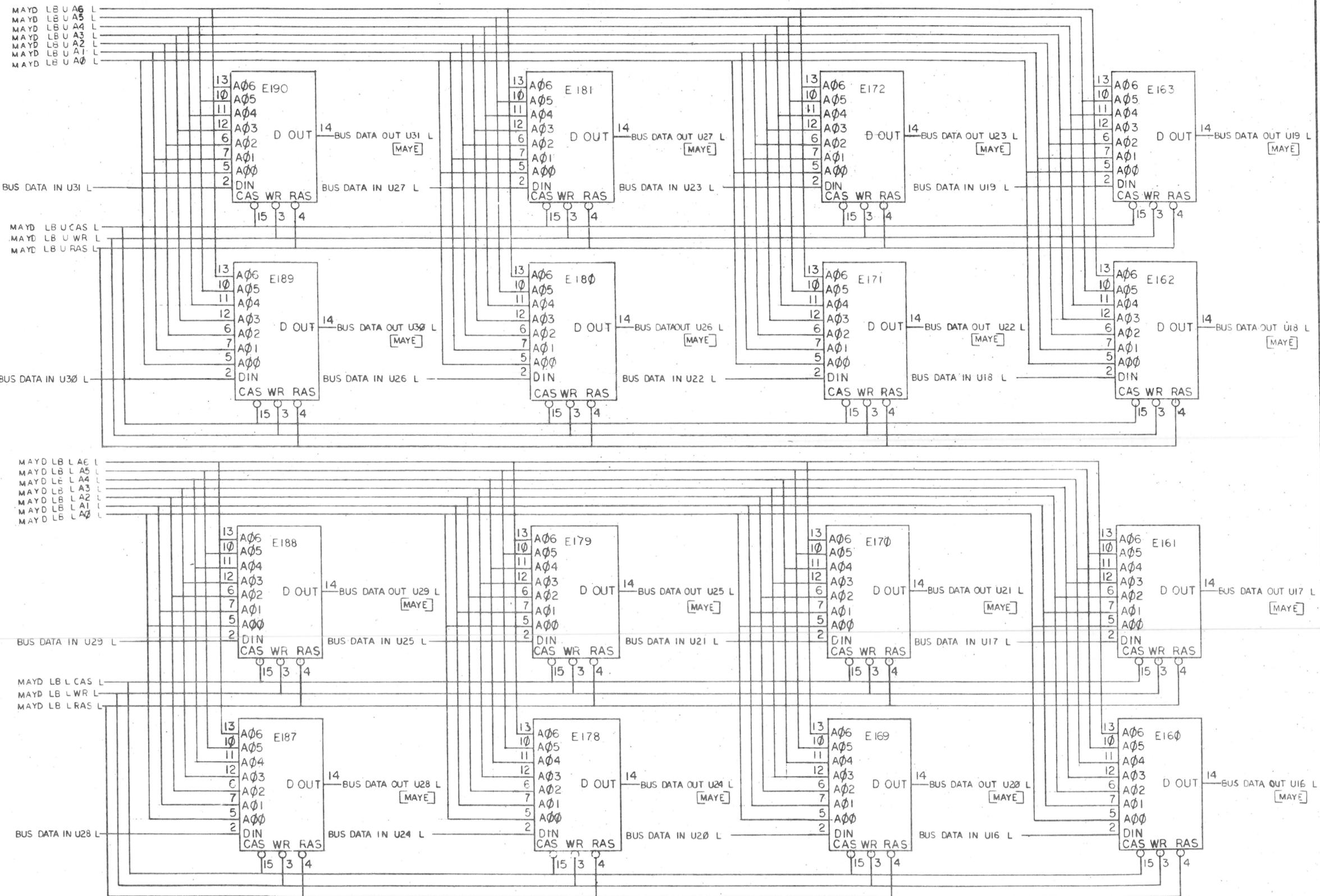
B

A

PIN 1 -5V
PIN 8 +12V
PIN 9 +5V
PIN 12 GND

REVISIONS		
CHK	CHANGE NO.	REV.

DEC FORM NO. 000 130



D

B

A

TITLE		SIZE CODE	NUMBER	REV.
MOS MEMORY ARRAY (MAY)		D	CS M8210-0-1	D
SCALE		SHEET	9 OF 17	DIST.

1 ML2

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D

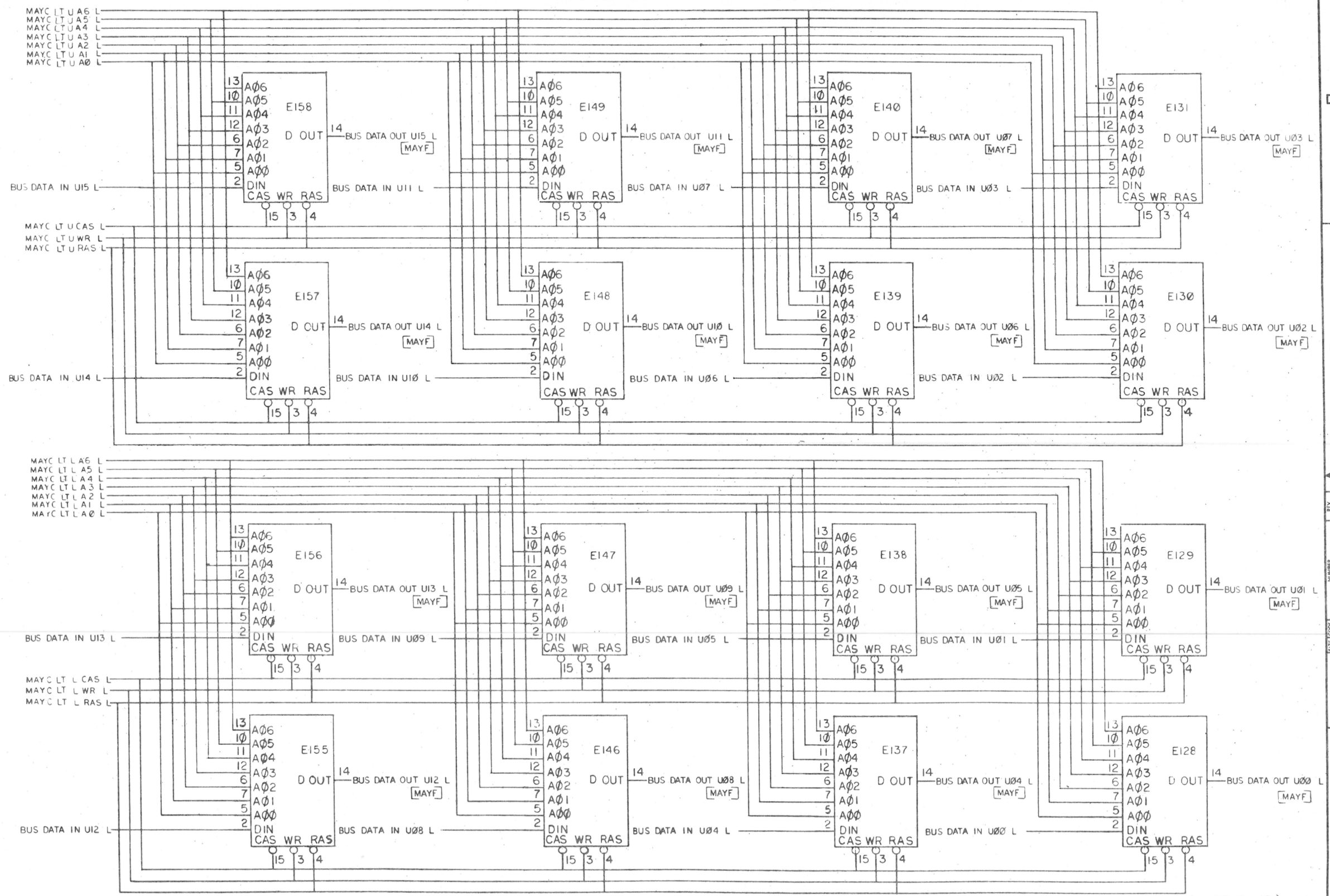
C

B

A

PIN 1 -5V
PIN 8 +12V
PIN 9 +5V
PIN 16 GND

REVISIONS		
CHK	CHANGE NO.	REV.



D

C

B

A

REV. D
NUMBER DCSM8210-0-1
SHEET CODE

TITLE		SIZE CODE	NUMBER	REV.
MOS MEMORY ARRAY (MAYL)		D CS	M8210-0-1	D
SCALE		SHEET 10 OF 17	DIST.	

8

7

6

5

4

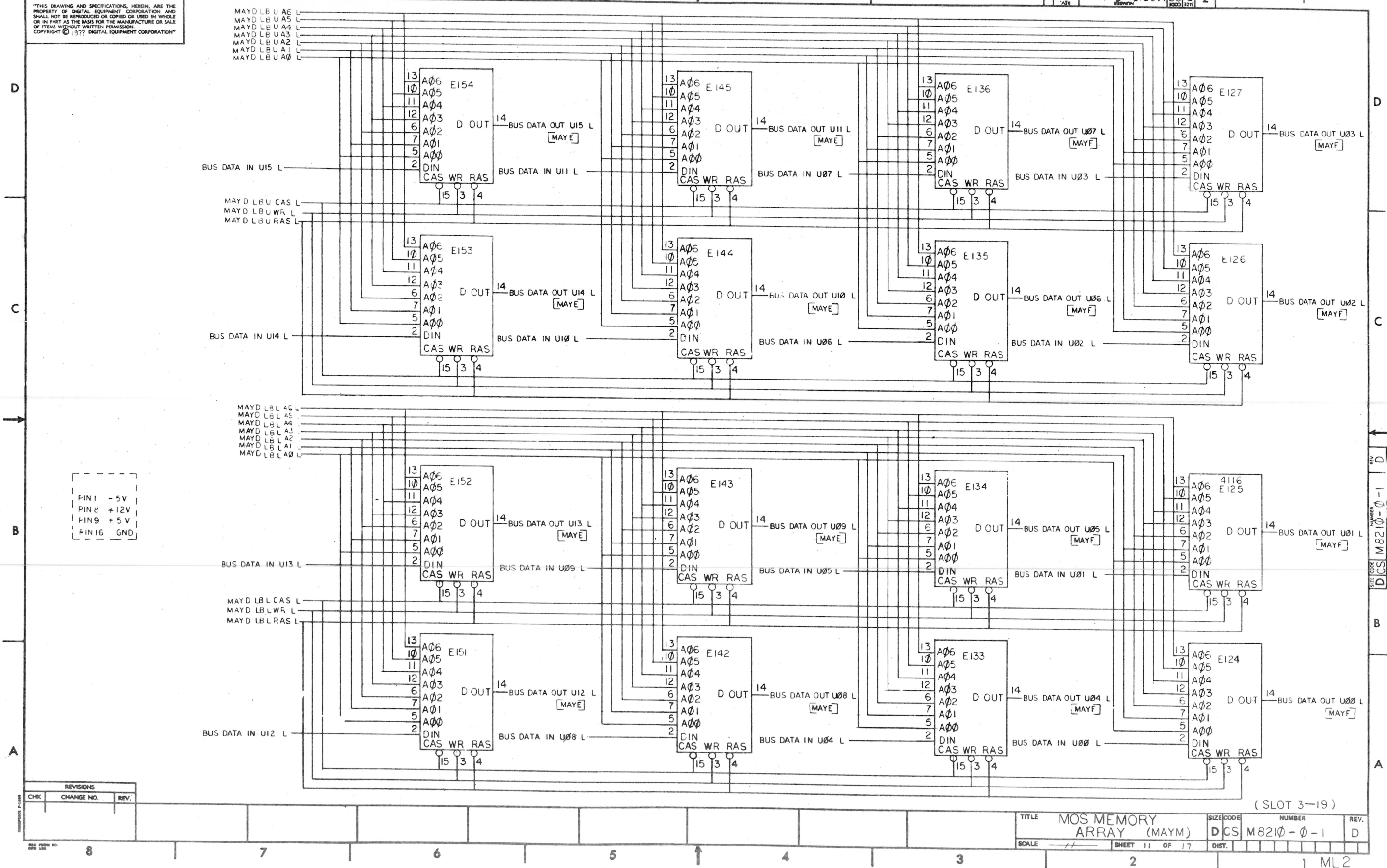
3

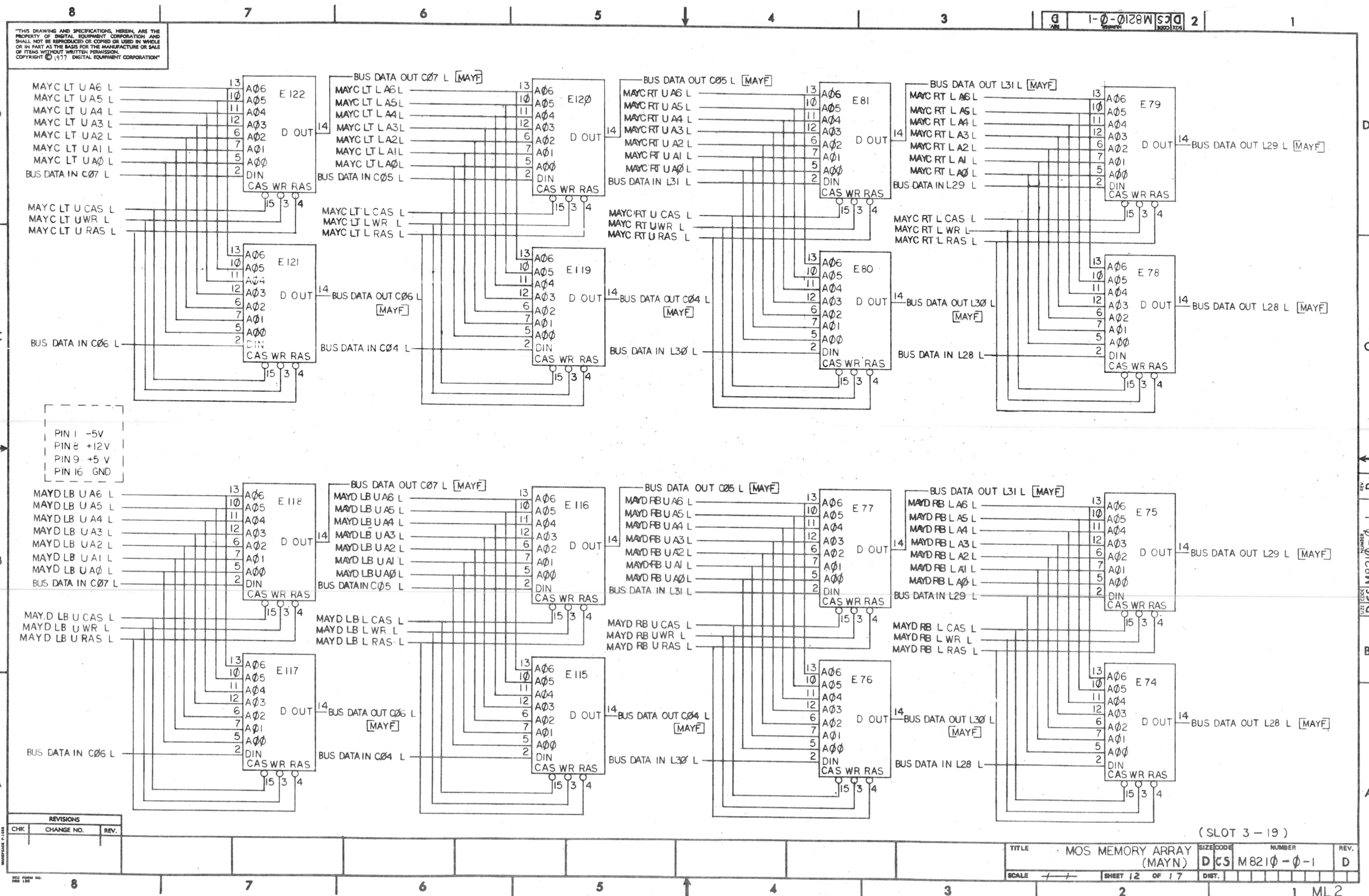
2

1

ML2

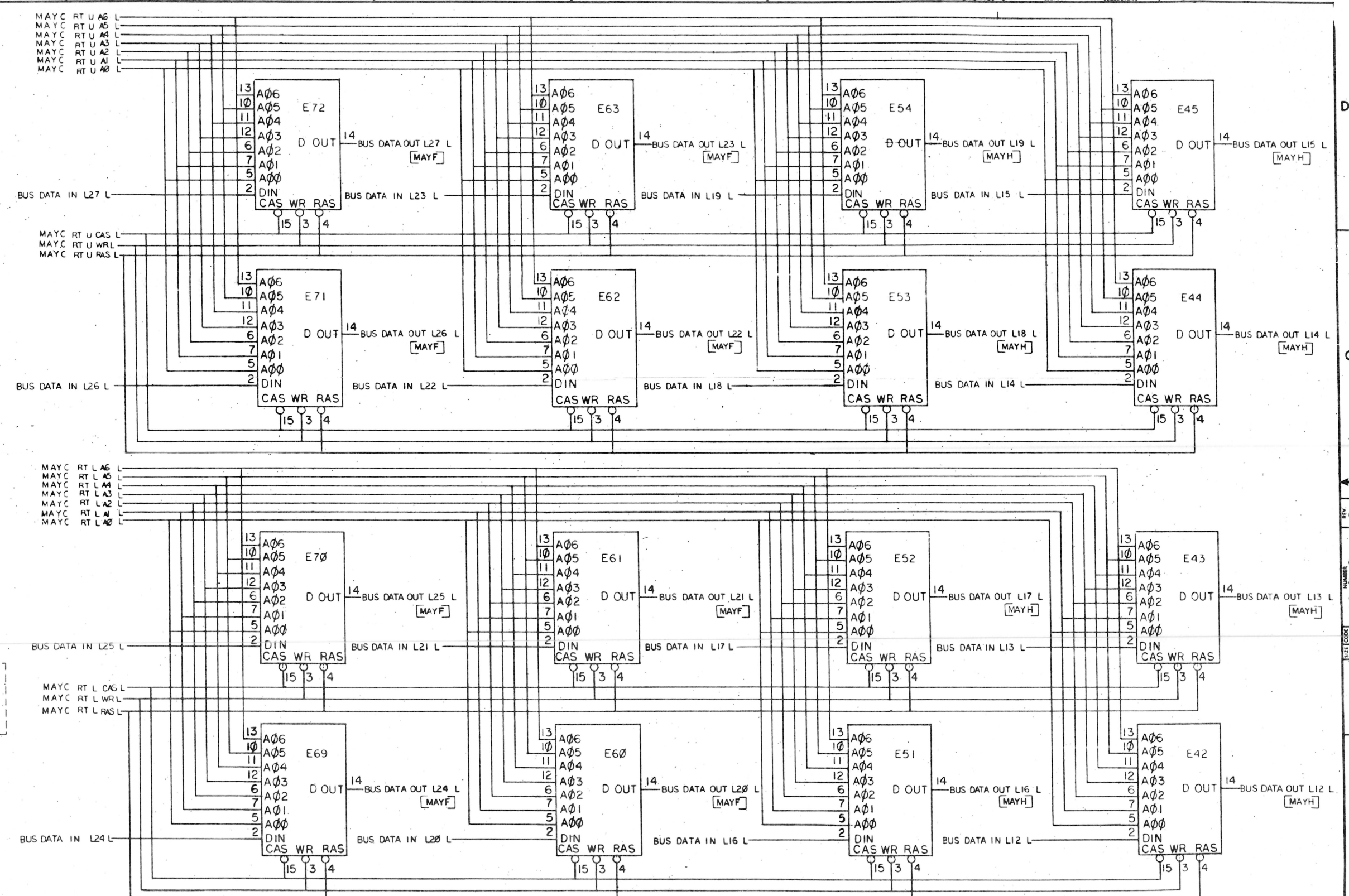
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D
C
B
A

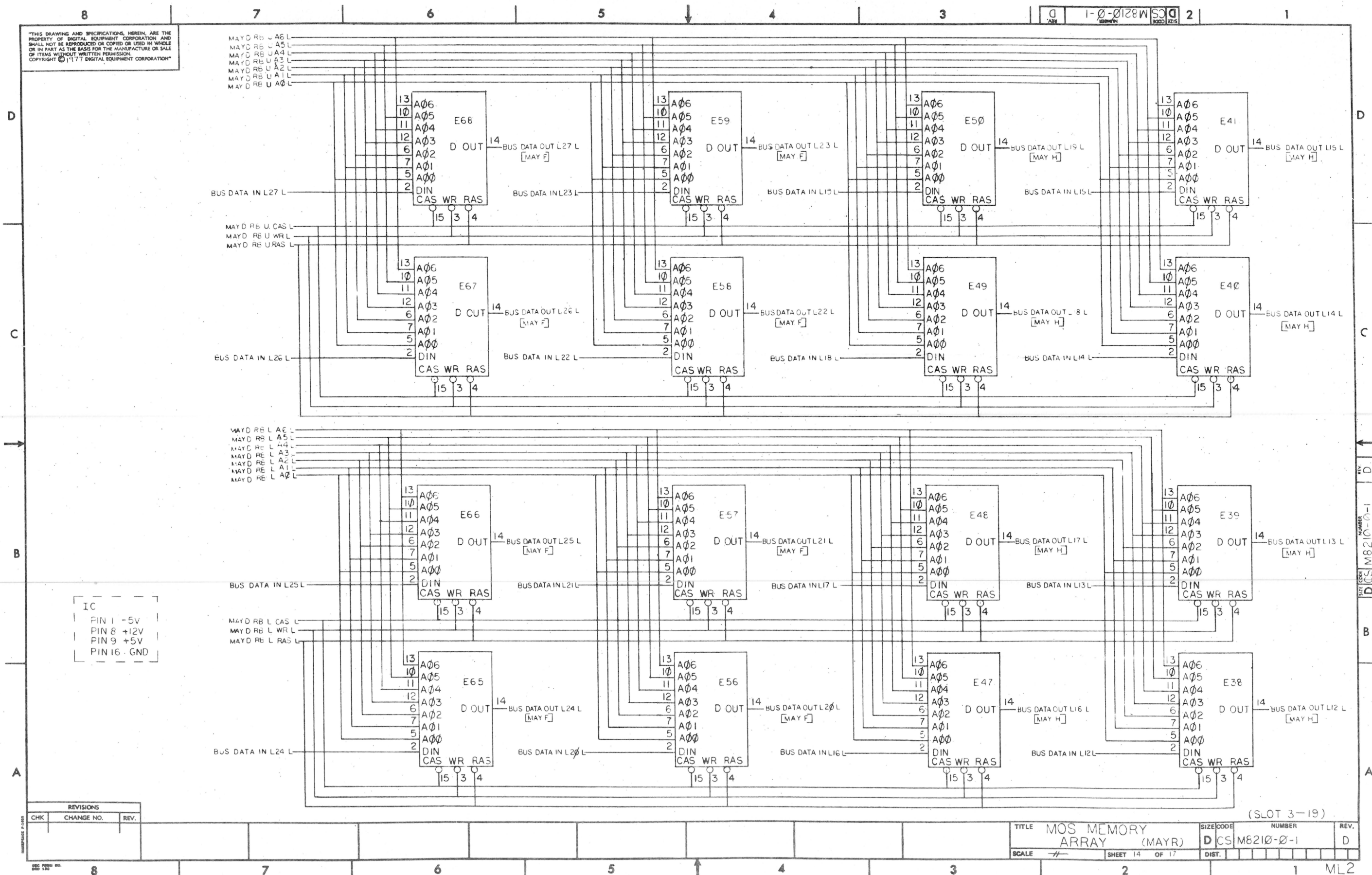


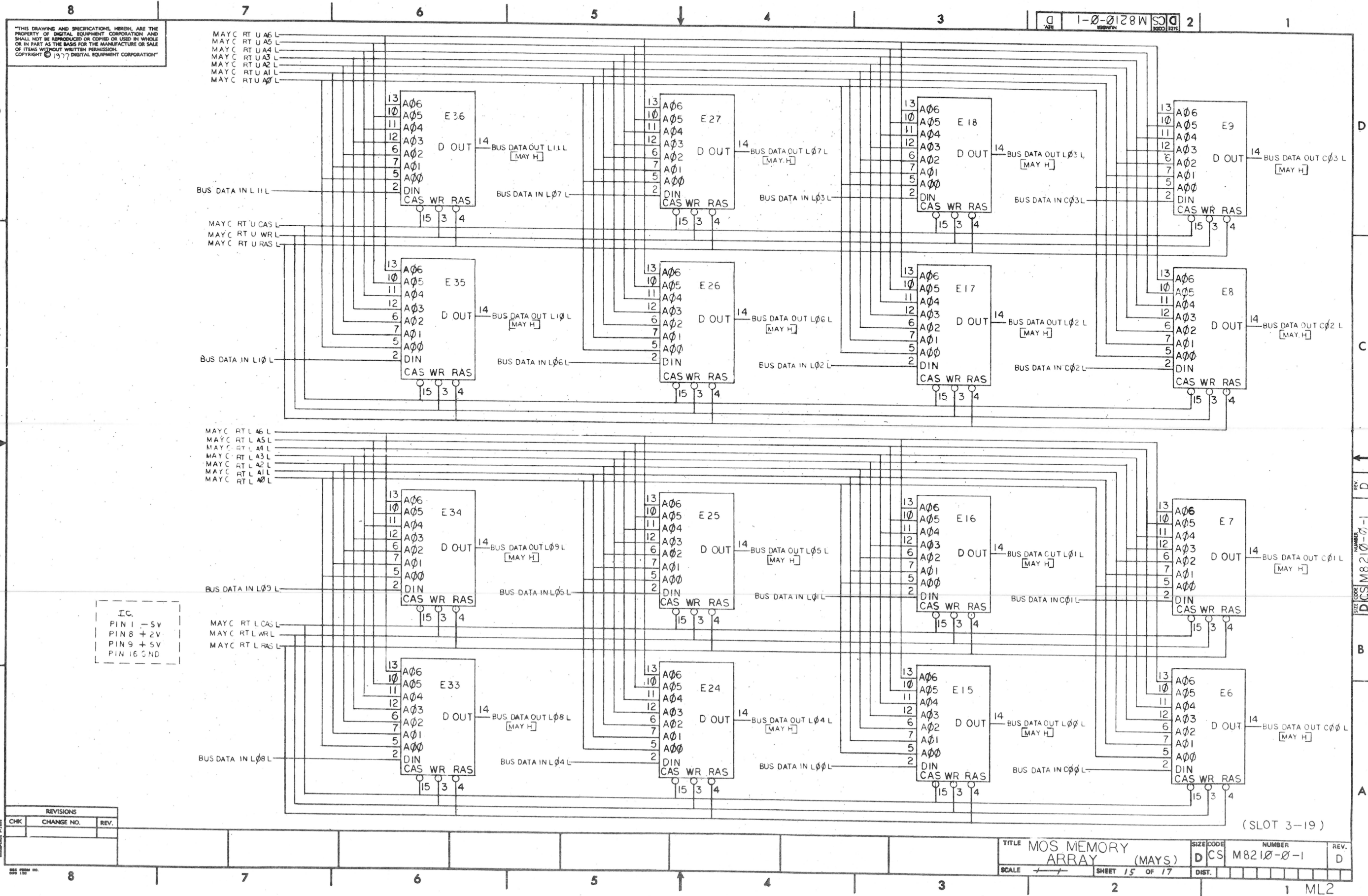
PIN 1-5V
PIN 8+2V
PIN 9+5V
PIN 16 GND

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE		SIZE	CODE	NUMBER	REV.
MOS MEMORY ARRAY (MAYP)		D	CS	M8210-0-1	D
SCALE		SHEET 13 OF 17		DIST.	

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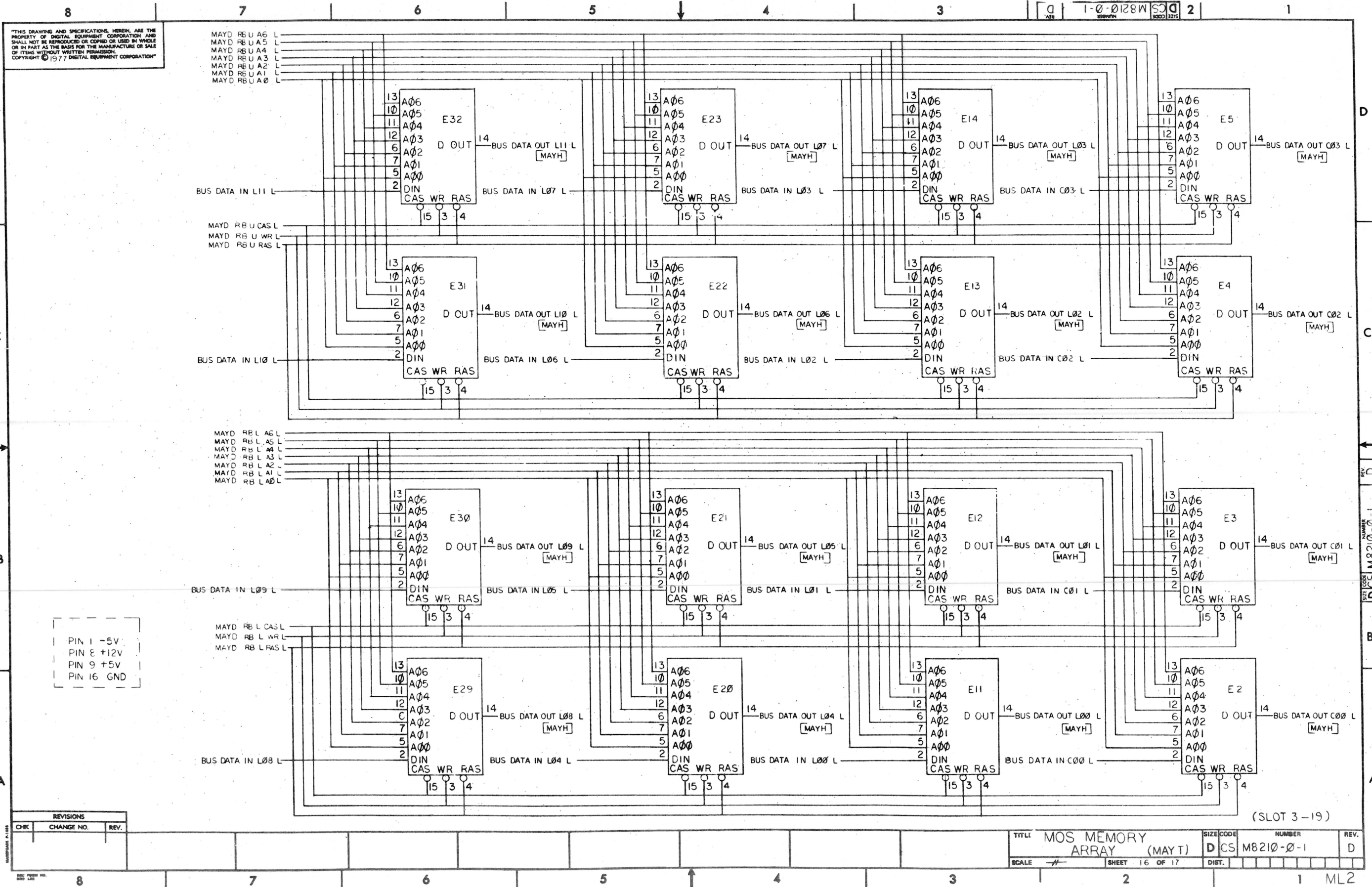




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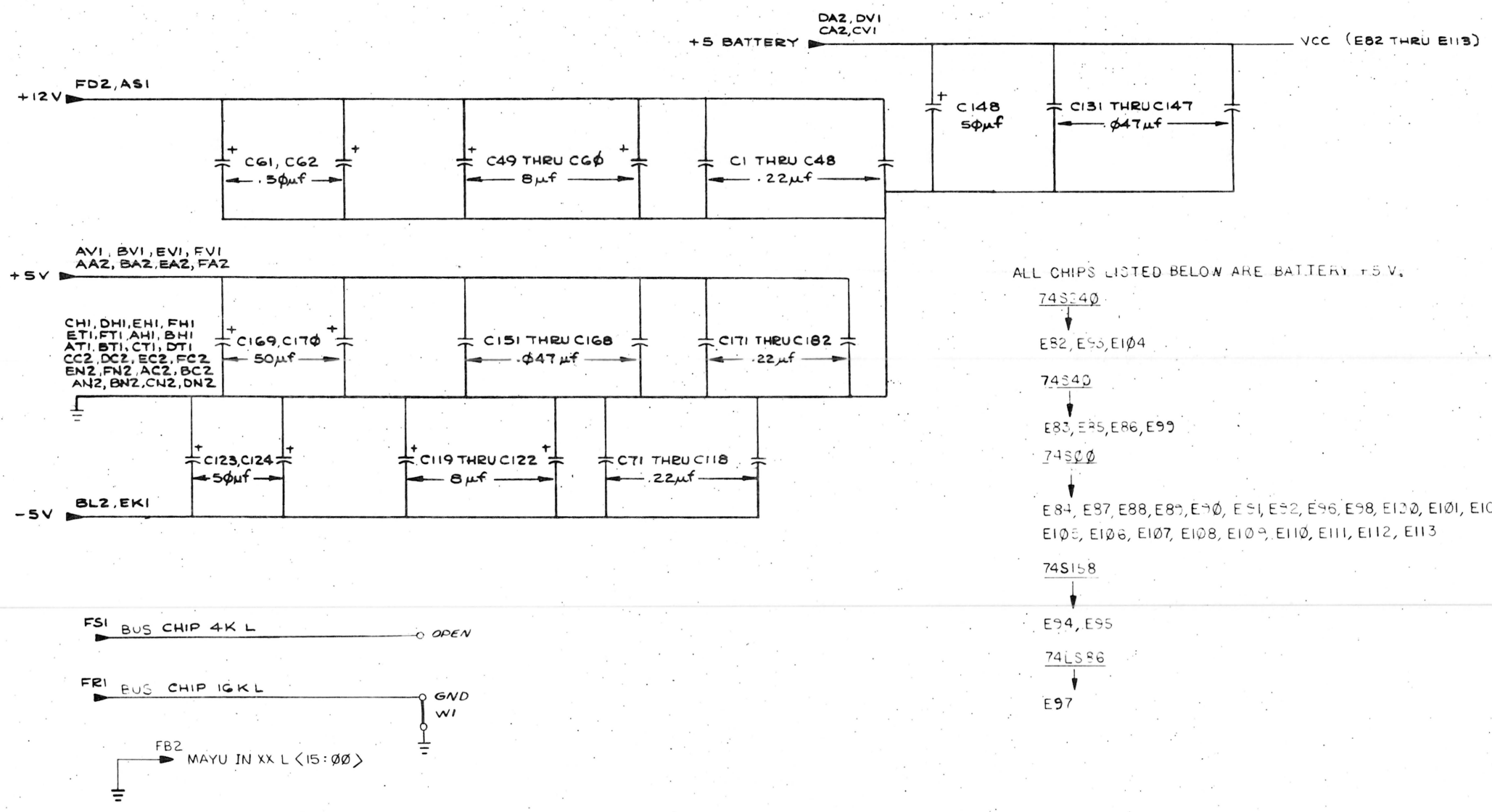
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE MOS MEMORY ARRAY (MAYS)
SCALE 1:1
SHEET 15 OF 17
SIZE CODE DCS
NUMBER M8210-0-1
REV. D
DIST. 1 ML2



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1-0-0128W 2



ALL CHIPS LISTED BELOW ARE BATTERY +5 V.

74S140
↓
E82, E83, E104

74S140
↓
E83, E85, E86, E99

74S140
↓
E84, E87, E88, E89, E90, E91, E92, E96, E98, E100, E101, E102, E103, E105, E106, E107, E108, E109, E110, E111, E112, E113

74S158
↓
E94, E95

74LS86
↓
E97

REVISIONS		
CHK	CHANGE NO.	REV.

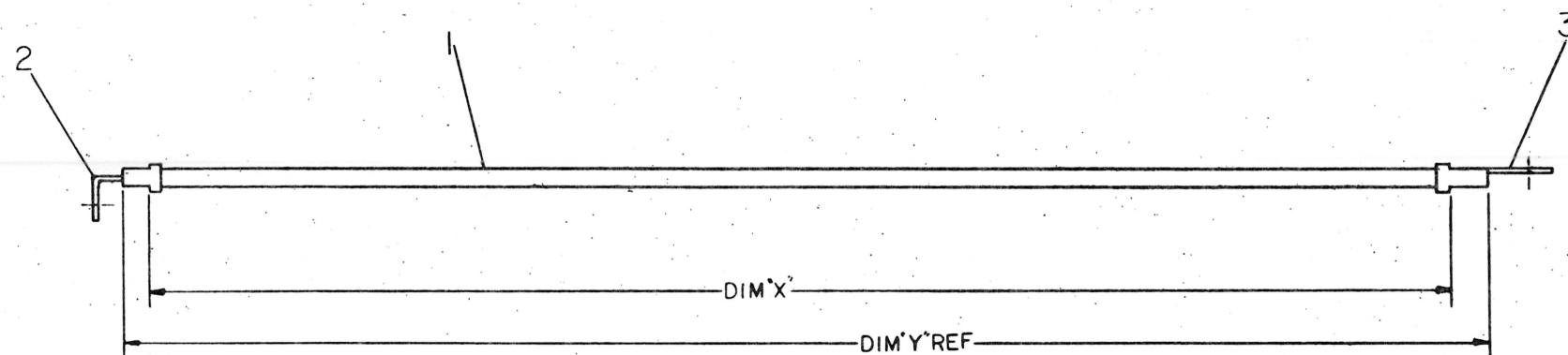
TITLE		SIZE CODE		NUMBER		REV.	
MOS MEMORY		D CS		M8210-0-1		D	
SCALE		SHEET 17 OF 17		DIST.			

(SLOT 3-19)

ML2 1

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LEGEND		
PART NO.	DIM X VARIATION	DIM Y (PRECUT) REF
7014250-01	1 FT-0 IN $\pm .5$ IN	1 FT-1 IN $\pm .5$ IN
7014250-0K	0 FT-8 IN $\pm .5$ IN	0 FT-9 IN $\pm .5$ IN



REV.	DATE	BY	CHK
1	10 Oct 77	R. MARTEL	
2	11 Oct 77		

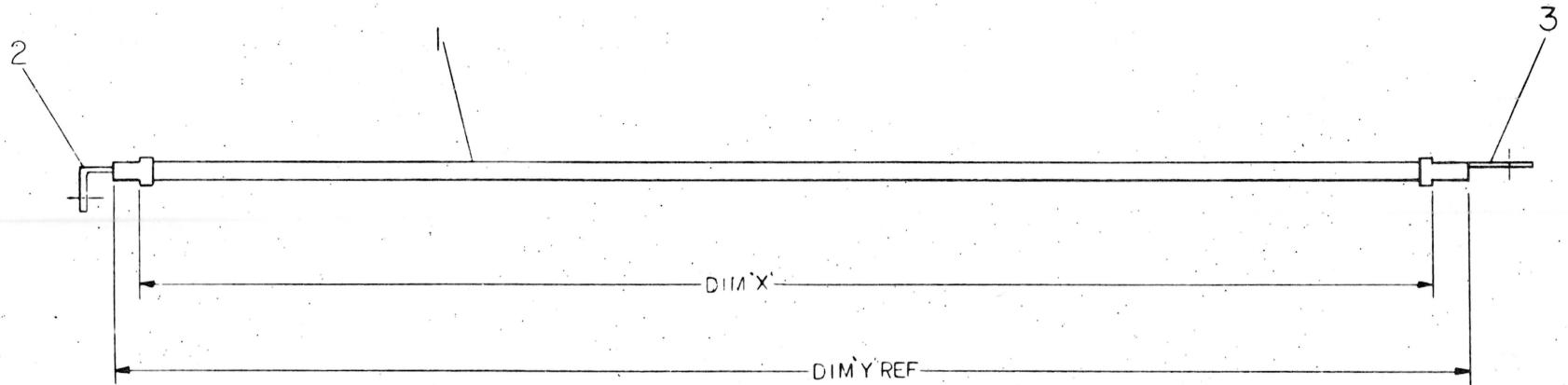
1	W6, POWER STRAIGHT	1211515-00	3
1	LUG, POWER 90°	1212086-02	2
1	WIRE 8 ANG BLACK	9107765-00	1

DESCRIPTION		DWG./PART NO.	ITEM NO.
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES			
ANGLES 30° 30'	CLASS OF ACCURACY	NOMINAL DIMENSION RANGE IN INCHES	
SURFACE QUALITY IN	(CHECK ONE)	0.001 TO 0.004	0.004 TO 0.008
MEDIUM	<input checked="" type="checkbox"/>	0.008 TO 0.012	0.012 TO 0.016
MICROINCHES	PREFERRED <input type="checkbox"/>	0.012 TO 0.016	0.016 TO 0.020

THIRD ANGLE PROJECTION	DRN. <i>V. J. Nelson</i> 28 Oct 77	FIRST USED ON VAX 11/780	TITLE CABLE, POWER (RTP MEMORY BLK)
REMOVE BURRS AND BREAK SHARP CORNERS	CHK'D <i>[Signature]</i> 28 Oct 77	ENG. <i>[Signature]</i> 28 Oct 77	PROJ. ENG. <i>[Signature]</i> 28 Oct 77
DO NOT SCALE DWG	NEXT HIGHER ASSY.	MATERIAL SEE PARTS LIST	SCALE NONE
FINISH	SHEET OF	SIZE D	NUMBER 1A

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LEGEND		
PART NO	DIM X VARIATION	DIM Y (PRECUT) REF
7014529-ID	1 FT-3 IN ±.5 IN	1 FT-4 IN ±.5 IN
7014529-OK	Ø FT-8 IN ±.5 IN	Ø FT-9 IN ±.5 IN



1	LUG, POWER STRAIGHT	1211515-00	3
1	LUG, POWER 90°	1212086-02	2
1	WIRE #8 AWG STRD RED	9107765-22	1

DESCRIPTION		DWG./PART NO.	ITEM NO.
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES			
ANGLES ±0° 30'	CLASS OF ACCURACY	NOMINAL DIMENSION RANGE INCHES	
SURFACE QUALITY IN	(CHECK ONE)	OVER 0 TO 0.2	OVER 0.2 TO 4.0
MICROINCHES	MEDIUM	OVER 4.0 TO 12.0	OVER 12.0 TO 40.0
	PREFERRED	OVER 40.0 TO 80.0	OVER 80.0 TO 160.0

THIRD ANGLE PROJECTION	DRN. <i>[Signature]</i>	FIRST USED ON	VAX 11/780
REMOVE BURRS AND BREAK SHARP CORNERS	CHK'D <i>[Signature]</i>	TITLE	CABLE, POWER (+5 MEMORY RED)
DO NOT SCALE DWG	ENG. <i>[Signature]</i>	SCALE	E-UA-11780-0-0
MATERIAL SEE PARTS LIST	PROD. <i>[Signature]</i>	SIZE	D
FINISH		NUMBER	IA 7014529-0-0
		REV.	A

REVISIONS	
CHK	REV.
7014529-00001	A
R. J. MARTIN	10 Oct 77
R. J. MARTIN	10 Oct 77

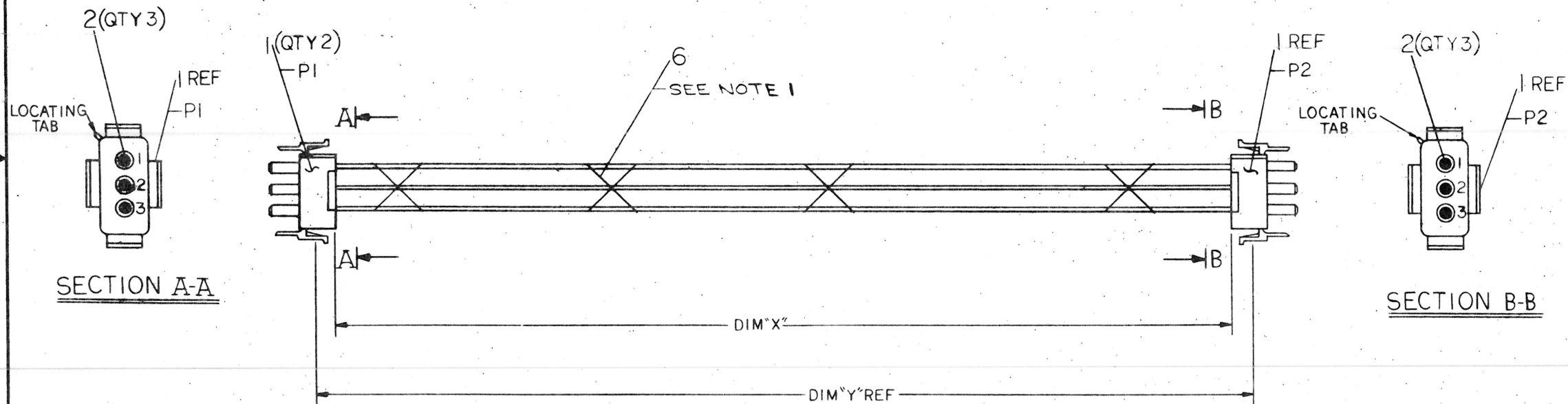
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WIRE TABLE							
ITEM NO	DESCRIPTION	FROM	TO	WITH	WITH	REMARKS	
4	18 YELLOW	PI-1	1&2	P2-1	1&2		
5	18 VIOLET	PI-2	1&2	P2-2	1&2		
3	18 BLACK	PI-3	1&2	P2-3	1&2		

LEGEND		
NUMBER	DIM "X" VARIATION	DIM "Y" (PRECUT) REF
7014212-0H	0FT-7IN \pm .5IN	0FT-8IN \pm .5IN
7014212-0M	0FT-11IN \pm .5IN	1FT-0IN \pm .5IN
7014212-1C	1FT-3IN \pm .5IN	1FT-4IN \pm .5IN
7014212-2C	2FT-3IN \pm .5IN	2FT-4IN \pm .5IN
7014212-2M	2FT-11IN \pm .5IN	3FT-0IN \pm .5IN

NOTES:

1. USE CABLE TIES (ITEM #6) APPROXIMATELY EVERY THREE (3) INCHES WHEN NECESSARY.

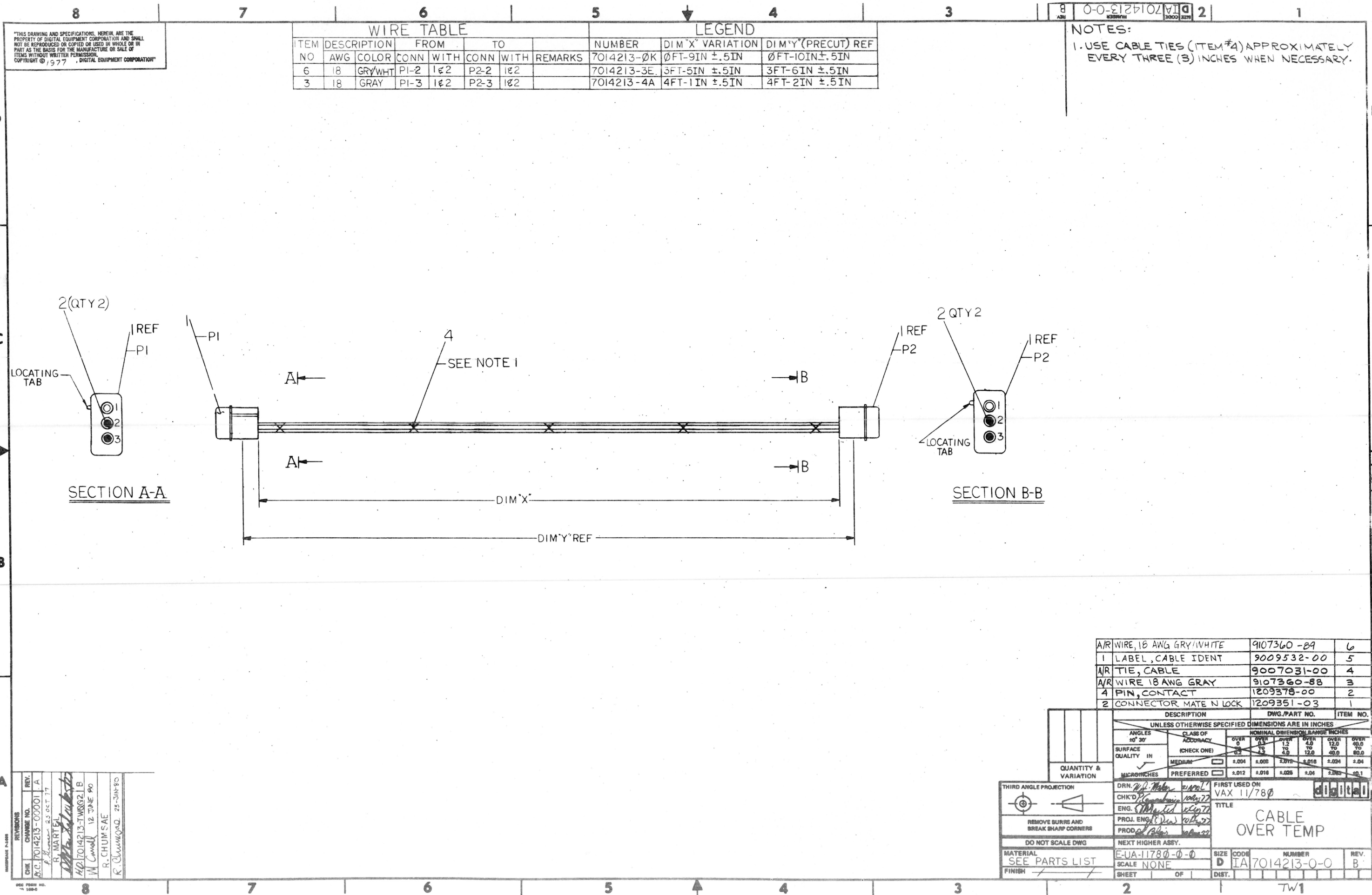


1 LABEL, CABLE IDENT.	9009532-00	7
2 CONNECTOR, UNIVERSAL	1212167-00	1
3 WIRE 18 AWG BLACK	9107360-00	3
4 WIRE 18 AWG YELLOW	9107360-44	4
5 WIRE 18 AWG VIOLET	9107360-77	5
6 SOCKET, CONTACT	1212130-00	2
7 TIE, CABLE	9007031-00	6

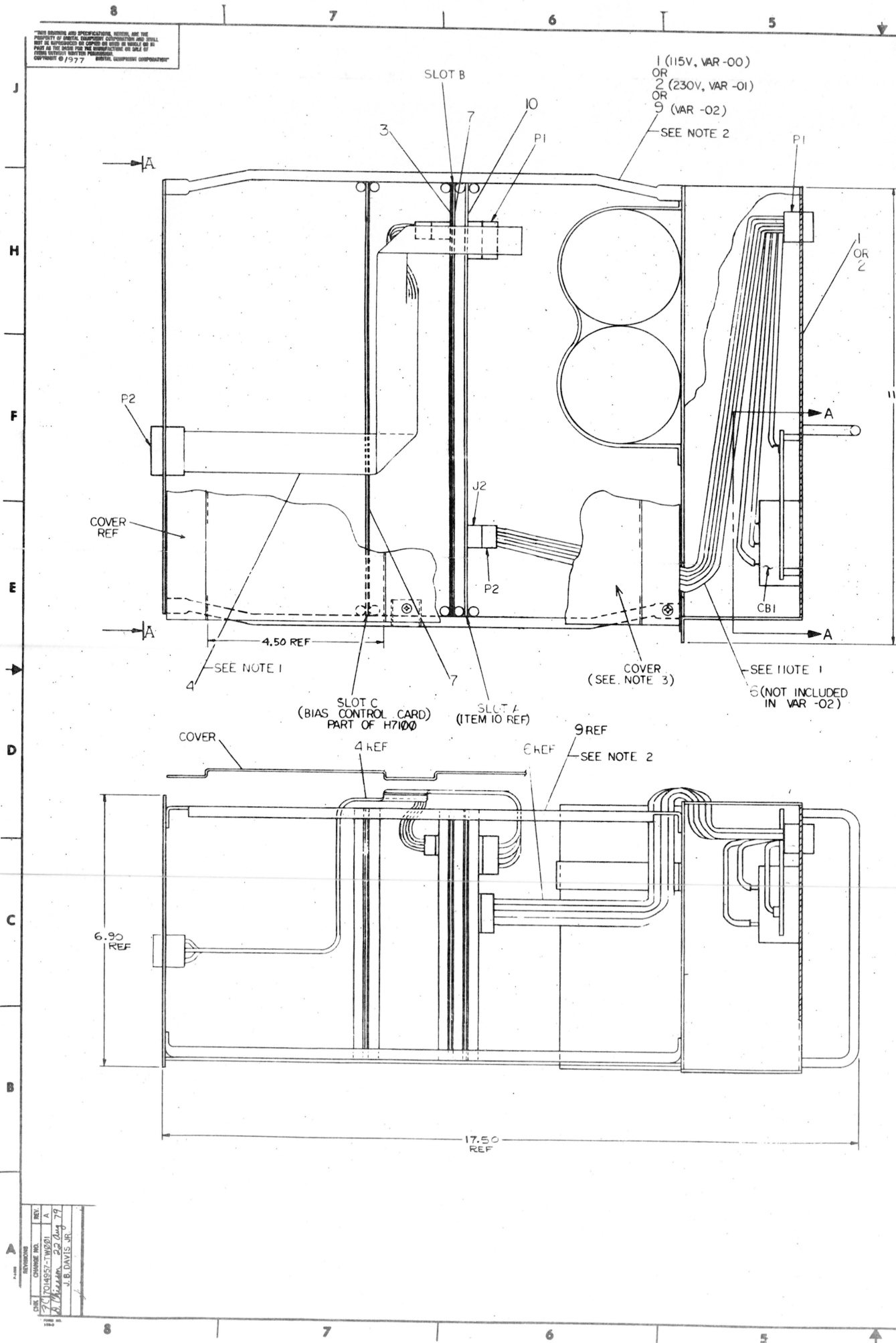
DESCRIPTION		DWG./PART NO.		ITEM NO.	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES					
ANGLES 30° 30'		NOMINAL DIMENSION RANGE INCHES			
SURFACE QUALITY IN	CLASS OF ACCURACY (CHECK ONE)	OVER 0	OVER 0.5	OVER 1.2	OVER 4.0
		0.2	0.3	0.5	12.0
MICROINCHES		0.004	0.008	0.012	0.016
PREFERRED		0.012	0.025	0.04	0.08

THIRD ANGLE PROJECTION	DRN. <i>[Signature]</i>	FIRST USED ON VAX 11/780
REMOVE BURRS AND BREAK SHARP CORNERS	CHK'D <i>[Signature]</i>	TITLE CABLE A.C, D.C LOW
DO NOT SCALE DWG	PROJ. ENG. <i>[Signature]</i>	SIZE CODE D IA 7014212-0-0
MATERIAL SEE PARTS LIST	PROD. <i>[Signature]</i>	NUMBER B
FINISH		REV. B

REV.	DATE	BY	CHKD	APP'D
1	7/77	R. MARTEL		
2	10/77	R. MARTEL		
3	11/77	R. MARTEL		
4	12/77	R. MARTEL		
5	1/78	R. MARTEL		
6	2/78	R. MARTEL		
7	3/78	R. MARTEL		
8	4/78	R. MARTEL		

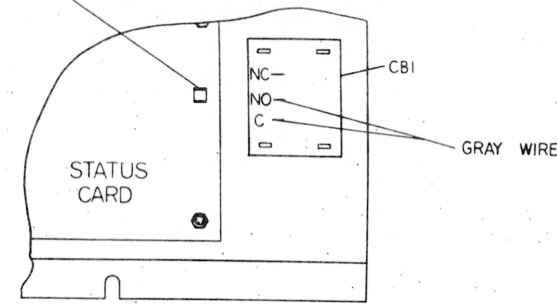


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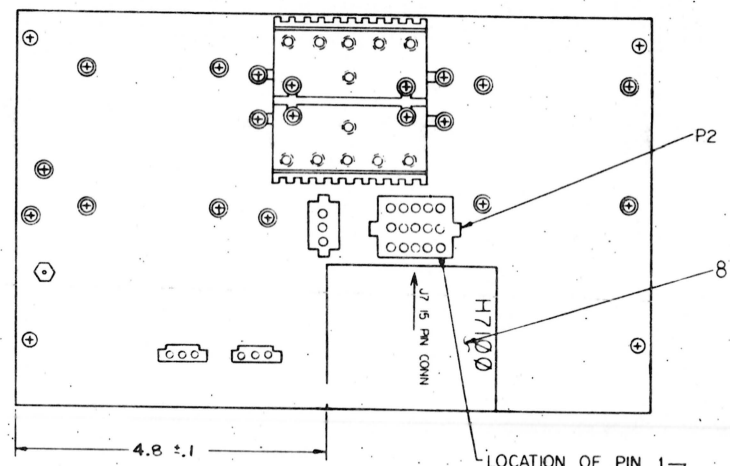


LEGEND	
NUMBER	VARIATION
7014957-00	115V
7014957-01	230V
7014957-02	2020 OPTION

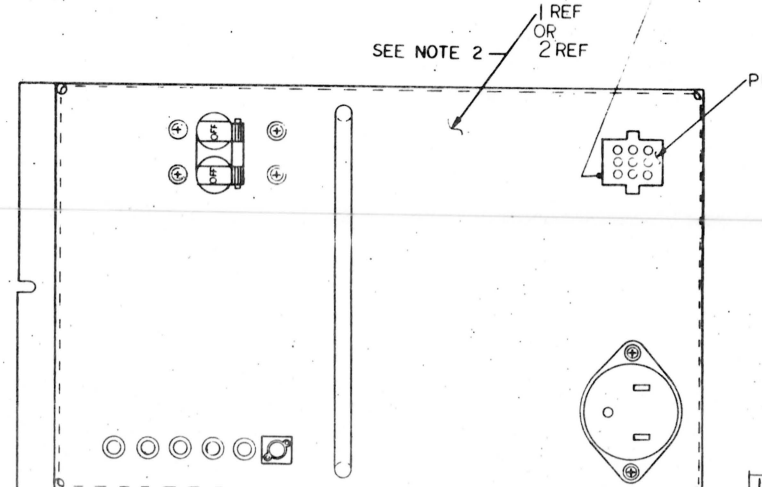
QUICK DISCONNECT (YELLOW WIRE)



VIEW A-A (VAR -00&-01 ONLY)
SCALE: NONE



VIEW A-A



NOTES:

1. ROUTE HARNESS, BATTERY OPTION (ITEM #6) FROM #5VB BATTERY REGULATOR (ITEM #9) TO CUTOFF IN FRONT PANEL, THEN ROUTE YELLOW WIRE TO TERMINAL QUICK CONNECT ON STATUS CARD. # GRAY WIRES TO CBI-NO AND CBI-C AS SHOWN. DISCARD EMPTY P1 AS RECEIVED ON H7100 (SEE VIEW A-A).
2. THE VIEWS SHOWN ON THIS DRAWING DEPICT THE ASSEMBLY AS IT WOULD LOOK IN THE -00 OR -01 VARIATIONS. THE -02 VARIATION WOULD LOOK SIMILAR EXCEPT THAT THE FRONT PANEL OF THE H7100 WOULD NOT BE INCLUDED. SEE DEC DRAWING NUMBER E-UR-H7100-B-0 FOR FURTHER INFORMATION.
3. AFTER INSTALLATION OF REG. BOARDS AND CABLES ARE COMPLETE REINSTALL COVER AS SHOWN.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	
ANGLE	CLASS OF ACCURACY
1	20
2	10
3	5
4	2
5	1
6	0.5
7	0.2
8	0.1
9	0.05
10	0.02
11	0.01
12	0.005
13	0.002
14	0.001
15	0.0005
16	0.0002
17	0.0001
18	0.00005
19	0.00002
20	0.00001
21	0.000005
22	0.000002
23	0.000001
24	0.0000005
25	0.0000002
26	0.0000001
27	0.00000005
28	0.00000002
29	0.00000001
30	0.000000005
31	0.000000002
32	0.000000001
33	0.0000000005
34	0.0000000002
35	0.0000000001
36	0.00000000005
37	0.00000000002
38	0.00000000001
39	0.000000000005
40	0.000000000002
41	0.000000000001
42	0.0000000000005
43	0.0000000000002
44	0.0000000000001
45	0.00000000000005
46	0.00000000000002
47	0.00000000000001
48	0.000000000000005
49	0.000000000000002
50	0.000000000000001
51	0.0000000000000005
52	0.0000000000000002
53	0.0000000000000001
54	0.00000000000000005
55	0.00000000000000002
56	0.00000000000000001
57	0.000000000000000005
58	0.000000000000000002
59	0.000000000000000001
60	0.0000000000000000005
61	0.0000000000000000002
62	0.0000000000000000001
63	0.00000000000000000005
64	0.00000000000000000002
65	0.00000000000000000001
66	0.000000000000000000005
67	0.000000000000000000002
68	0.000000000000000000001
69	0.0000000000000000000005
70	0.0000000000000000000002
71	0.0000000000000000000001
72	0.00000000000000000000005
73	0.00000000000000000000002
74	0.00000000000000000000001
75	0.000000000000000000000005
76	0.000000000000000000000002
77	0.000000000000000000000001
78	0.0000000000000000000000005
79	0.0000000000000000000000002
80	0.0000000000000000000000001
81	0.00000000000000000000000005
82	0.00000000000000000000000002
83	0.00000000000000000000000001
84	0.000000000000000000000000005
85	0.000000000000000000000000002
86	0.000000000000000000000000001
87	0.0000000000000000000000000005
88	0.0000000000000000000000000002
89	0.0000000000000000000000000001
90	0.00000000000000000000000000005
91	0.00000000000000000000000000002
92	0.00000000000000000000000000001
93	0.000000000000000000000000000005
94	0.000000000000000000000000000002
95	0.000000000000000000000000000001
96	0.0000000000000000000000000000005
97	0.0000000000000000000000000000002
98	0.0000000000000000000000000000001
99	0.00000000000000000000000000000005
100	0.00000000000000000000000000000002